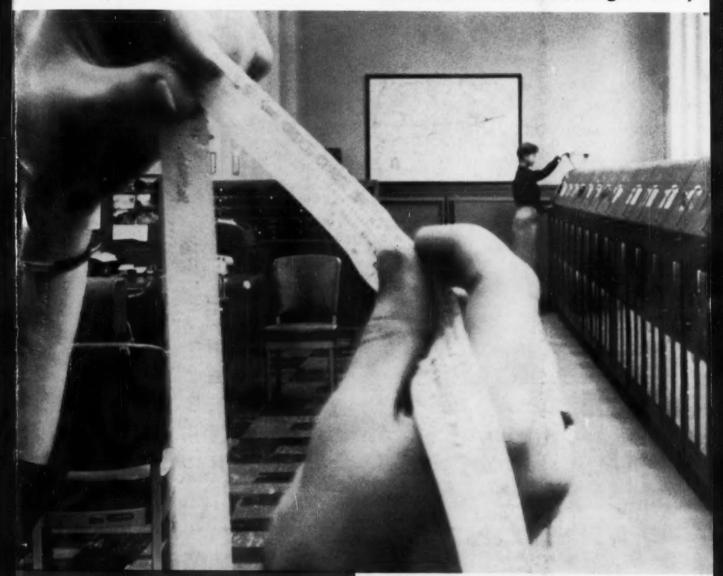
# The IRON AGE

October 8, 1959

A Chilton Publication

The National Metalworking Weekly



How New Systems

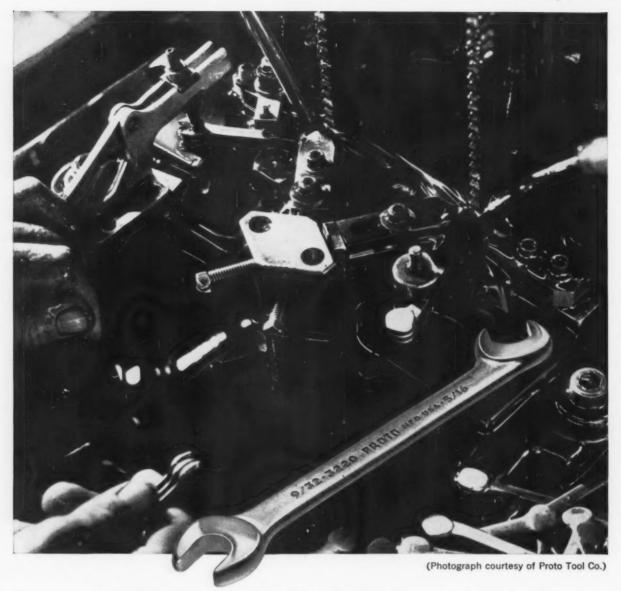
Move Business Facts

Farther, Faster P. 67

How Fast Can Steel
Mills Recover? – P. 70

Is Automation Key To Small-Plant Survival? - P. 105

Digest of the Week - P. 2-3



## Uniform hardenability...prime requirement for high-speed broaching

The most demanding requirement of steel used in high-speed broaching operations is bar-to-bar and heat-to-heat uniformity. Even slight variations, particularly in hardness, can result in tool breakage, lost production time, and expensive retooling.

ARISTOLOY

By controlled melting in electric furnaces, Copperweld produces a steel of uniform hardenability characteristics. This prime broaching steel, called Protoloy®, is manufactured for Proto Tool Company. Copperweld is willing and able to produce special steels for you to your particular specifications.

For complete information about the full range of Aristoloy A.I.S.I. standard analyses, call the Copperweld representative in your nearest large city . . . or write for NEW PRODUCTS & FACILITIES CATALOG.



#### COPPERWELD STEEL COMPANY

ARISTOLOY STEEL DIVISION . 4001 Maltoning Ave., Warren, Ohio . EXPORT: Copperweld Steel International Co., 225 Broadway, New York 7, N. Y.

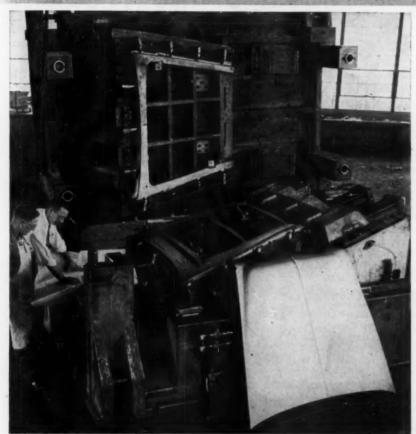


## Tool Steel Topics



BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

Export Distributor: Bethlehem Steel Export Corporation



## Automotive Die, in 101 Sections, Made from Water-Hardening Steel

This huge die, made up of Bethlehem W-1 carbon water-hardening tool steel, trims an automobile hood. Made from tool steel furnished by Peninsular Steel Co., Detroit, the die was photographed recently at Republic Die & Tool Company, Wayne, Mich. It contains 44 composite sections, 34 wear plates, and 23 solid sections.

Bethlehem carbon water-hardening steels were selected for this exacting application because of their good wear-resistance, easy machinability, and simple heat-treatment—plus ease of welding should repair become necessary.

Bethlehem carbon water-hardening tool steels, because of their carefully controlled hardenability, provide economical service in applications calling for high shock-resistance. And with their highly selective carbon range, they have good resistance to wear, plus the toughness to withstand cold battering.

If you have any questions about the use of Bethlehem carbon waterhardening tool steel, or any of our other popular grades, get in touch with your Bethlehem tool steel distributor. He's as near as your telephone.

#### BETHLEHEM TOOL STEEL ENGINEER SAYS:



Here's How to Stabilize Gages

High-precision gages, commonly made of BTR tool steel (AISI Type 01), need a stabilization treatment if they are to maintain their accuracy for years. Otherwise expansion will eventually change dimensions outside of the permissible tolerance. These dimensional changes are in a magnitude of hundred-thousandths of an inch per inch, or smaller. Insignificant on ordinary tooling, they are important on precision gages.

The expansion which occurs over a period of time is due to the transformation of austenite retained during the quench for hardening. The object of the stabilization treatments is to transform the retained austenite during the treatment, so that none remains which could transform later on. This condition exists in all tool steel grades which can be hardened to Rockwell C 60 or higher.

The most common method for stabilizing high-precision BTR gages is:
1. Quench and temper in the normal manner to produce the desired hardness. 2. Rough grind. 3. Subzero cool to minus 100/120 F in refrigerator or dry ice. 4. Warm to room temperature and then retemper at original temperature. 5. Finish grind to size.
6. Repeat cycles of subzero cool followed by tempering five more times.
7. Lap or superfinish to size.

Sometimes it is possible to shorten this procedure, particularly if the design is such that there is little hazard of cracking. For example, the tools can be subzero cooled directly from the quench, with no interval at room temperature, followed by tempering and grinding. This will permit stabilization with only two additional cycles of subzero cool plus temper, but the disadvantage is that cracking may occur after quenching.

It is also possible to shorten the stabilization by cooling to minus 314 F in liquid air. This permits reducing the cycles of subzero cool plus temper

to three instead of six.

#### THE IRON AGE Chestnut and 56th Sts. Philadelphia 39, Pa., SH 8-2000

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## The IRON AGE

October 8, 1959-Vol. 184, No. 15

### Digest of the Week in

\*Starred items are digested at right.

#### **EDITORIAL**

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#### **NEWS ARTICLES**

#### STEEL PRODUCTION

Won't End Shortages - While mills hope to reach full production within three weeks of start-up dates,



it will take up to 12 weeks before users receive tonnage orders for some items. P. 70

#### EAST-WEST TRADE

An Open Eye-Government and industrial leaders are keeping an eye on Soviet trade moves to make sure Communist goods are not dumped in the United States. P. 72

#### FIRE LOSSES

Can Be Reduced - Fires cost American manufacturers \$175.3 million in 1958. Much of this loss was due to carelessness on the part of management and could have been prevented.

#### HEAVY INDUSTRY

Good Year in '60-Tight money

#### **■** COVER FEATURE

orders on TAPE: Communications Center at Crucible Steel Co. of America typifies new systems that are changing the concepts of distance. Orders are transmitted hundreds of miles and processed instantly. It's a growing industry trend.

P. 67

### Metalworking

caused some worry as AMA forecasters got together to predict 1960 sales. But good year is expected.

P. 74

#### U. S. LEADING

Growing Economy — Economic growth in the United States is ahead of the Soviet's. But inflation must be curbed if we're to stay ahead.

P. 87

#### FEATURE ARTICLES

#### **AUTOMATION GROWTH**

Key to Modernization—Building block concepts, standardized components, and shifts in buying methods result in big bargains in modernization for general manufacturers. Right answers may spell the difference between corporate success and failure. The best approach is a feasibility study.

P. 105

#### TURRET PRESS CYCLES

Benefit from Tape Controls— Machine speeds have valid meaning in production planning when a taped cycle removes the variables of manual steps. This setup puts short-run piercing into the long-run mass-production class, reducing inventory by \$20,000.

P. 108

#### TWO ALLOY STEELS

Fill Ferrous Needs—A "simplify, standardize, save" program is based on just two nickel-alloy steels. One of the recent combinations consists of a steel for through-hardening,

AISI 4340, and another steel for case-hardening, AISI 4615-20. Two versatile steels.

P. 110

#### COPPER NOSE CONES

Forged in One Pass—Among the largest copper closed-die forgings ever made, 5 ft in diameter and weighing nearly a ton, are used as nose cones for the Air Force Atlas ICBM and IRBM missiles. P. 113

#### NEW IRON-MAKING METHODS

Are They Ready for Use?—Direct reduction and other new methods of making iron are very much on the scene. More than thirty of them hover near pilot stages. But when will it pay to use them? P. 114

#### MARKETS & PRICES

#### **NEW IRON PLANT**

Will Use Gas—Plans are in advance stages for building a new iron plant near the head of Lake Superior. It will use gas instead of coke.

P. 76

#### **BIGGER SMALL-CARS**

Coming Soon — Ford's Mercury Div. will offer a new small-car in the spring. Named Comet, it'll be larger, more powerful, and more expensive than present small-cars.

P. 83

#### **FARWEST STEEL**

Sales Fell in 1958—Shipments of mill products to Farwest users fell \$1.3 million tons last year. But 1959 will be a big year. P. 89

#### STEEL SUMMARY

Impact Spreads—An end to the steel strike can't prevent spreading of layoffs. Mills face a tough time getting back into full production. It will take many weeks for shipments to come back to pre-strike levels. Ore shortage looms.

P. 149

#### HAND TOOLS

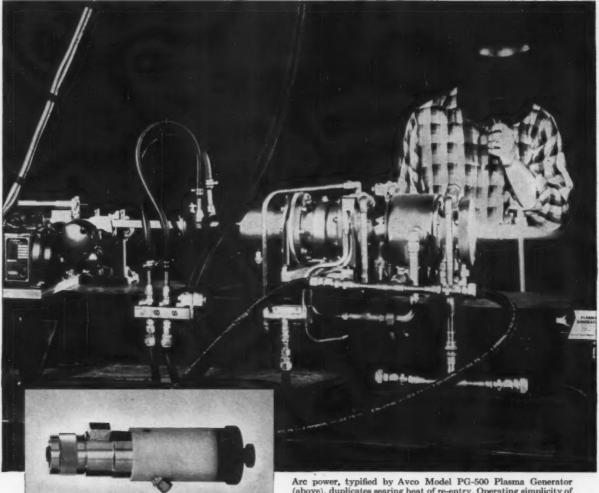
Big Year—Hand tool manufacturers are having one of their biggest years and expect the high business volume to continue. The steel strike hasn't affected production.

P. 150

#### **NEXT WEEK**

Planning for Growth — Market studies are only one phase of planning for future growth. Next week American Machine & Foundry's Morehead Patterson (left) tells of the other factors which enter into long-range planning decisions.





Arc power, typified by Avco Model PG-500 Plasma Generator (above), duplicates searing heat of re-entry. Operating simplicity of Avco Model PG-030 (inset) permits wide use in the development of plasma spray techniques. Lightweight, compact—only 2½" x 9".

NOW AVAILABLE ...

## USE-PROVEN PLASMA GENERATORS that duplicate the searing heat of re-entry

Avco Model PG-500 Plasma Generator, operating at one atmosphere of pressure, produces enthalpies from 250 to 12,500 Btu/lb, consumes up to 1.5 megawatts of power, uses air as the working fluid and incorporates over two years of re-entry simulation experience. PG-500, producing heat fluxes and temperatures on a continuous basis formerly attained on an intermittent basis in the shock tube, now provides the long running times in air necessary for materials development.

Another unit in the Avco-developed family of plasma generators, Model PG-030, consumes from 2 to 20 kilowatts of power and produces temperatures over the range from 2500°F. to 12,000°F. Model PG-030 is used for development of plasma spray techniques and spectroscopic studies. Using argon as the working fluid, it is capable of virtually unlimited operation at a power level of 15 kilowatts. Model PG-030 is especially suited to low cost

operation and features automatic starting, a high degree of controllability, quiet operation and shop-type reliability.

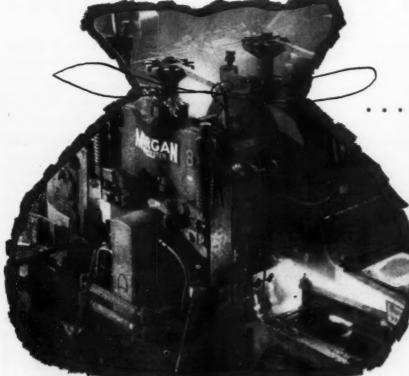
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### ARMCO FREE-MACHINING BARS

## Help You Cut Costs on Stainless Jobs...

## From Start to Finish



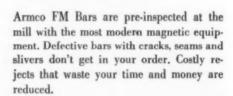
In Your Planning-

11 grades of Armco FM Stainless offer a wide range of sizes, shapes and finishes. They enable you to save right off the bat: Use higher speeds, remove less metal, even eliminate some operations.

Screw Machines
Secondary Operations—

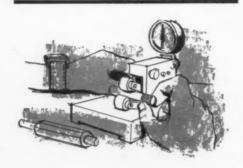
Uniform machinability of Armco FM Stainless assures maximum production, makes it easier to hold size and finish tolerances. Use Armco's manual, motion picture, or machining specialists to eliminate "bugs" and for production-increasing tips.

Inspection-





Try Armco Free-Machining Bars on that next stainless job. See how they can help you cut costs. For information on sizes, shapes and grades available, as well as helpful machining information, just fill out and mail the coupon.



	New steels are
RMCO STEEL CORPORATION, 1619 Curting the Information on sizes and grading the Your manual, "Machining Arm	es of Armco FM Stainless
☐ We would like to borrow your motion	picture, "Machining Stainless Steel."
COMPANYSTREET	-
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### ARMCO STEEL



Armco Division • Sheffield Division • The National Supply Company • Armco Drainage & Metal Products, Inc. • The Armco International Corporation • Union Wire Rope Corporation

## Collective Bargaining: Where Will It Go From Here?

If you are looking for a nice pat or long-haired piece here, skip reading this.

Classically, the steel strike is supposed to keep going until the workers go broke, win, or give in. Management is supposed to resist until it wins, compromises, or loses.

Government, officially, is supposed to keep out. If it gets in, it is to avoid taking sides. Gentle pressure or the law is to be used.

Other businesses-consumers, friends or enemies-are supposed to cheer, give solace and support and help out their side.

That's the way it is argued-in the plush management clubs or in the workers' clubs (bars). It is exciting until: Stomachs become empty; payments are overdue; wives nag day and night; companies make no dividends; directors become suspicious of officers; customers start yelling and cursing; and politicos begin boiling a witches brew-for both sides.

What's the lowdown on all this? The steel strike brought up deep and basic points. So much so that collective bargaining is in danger.

Both sides in steel went for what they thought was a principle. Most of the time each thought the other completely wrong. Often there wasor is-a complete blackout in communications.

The President tried four or five times to brace up the superstructure of collective bargaining. Both sides should thank God for Ike-a patient and understanding man. Others in his position would have shattered completely the dignity of either or both sides.

Today is not 1907, 1919, 1929 or 1933. Today we are dangerously interdependent. Today we are threatened with inflation, Communism or even complete annihilation. It is unlikely that any President or Congress will consistently allow major forces of management or labor to battle it out-no matter who is in the right.

The steel union must bear the brunt of responsibility for the steel strike situation. But that doesn't end the issue. And it doesn't relieve the union of its responsibility to catch up with worker thinking.

Before the next steel contract opening, there must be many meetings and attempts by both sides to lay ground rules to prevent a recurrence of this year's experience.

Free collective bargaining hangs by a thread!

Tom Campleee

Editor-in-Chief

## STEEL

# still more types & tons at Ryerson than anywhere else

By the time you read this, the steel strike may be settled. We sincerely hope so. However, whether it is or not, we can still meet most steel requirements—in spite of current heavy demand.

Our inventories are still generally "good to excellent"—and once the strike ends we will begin to receive stock replenishments in a matter of days. So we should quickly be in an even better position to serve you.

Strike or no strike, as always, you can count on Ryerson to maintain its regular policy of fair prices. And as usual we are fully prepared to meet any requirements for aluminum, industrial plastics and metalworking machinery.

Your Ryerson representative is well qualified to review the facts and help you get the maximum for your steel-buying dollars. Ask him to analyze your requirements with you the next time he calls.

#### STEELS IN STOCK

CARBON STEEL BARS—Hot rolled and cold finished—round, square, hexagon, flat, etc.

STRUCTURALS—Channels, angles, beams, etc.

PLATES—Forming and welding, flange and firebox qualities, high carbon, E-Z-Cut, etc.

SHEETS & STRIP-More than 20 types.

**TUBING**—Seamless and welded mechanical, hydraulic cylinders and fluid line, structural, etc.

STAINLESS STEEL—Sheets, plates, bars, tubing, pipe and fittings. 15 types, standard and aircraft qualities.

**ALLOY STEEL**—Case hardening, direct hardening and heat treated, Rycut leaded alloys, aircraft quality alloys, etc.

CONSTRUCTION STEELS—Re-bars, spirals, wire fabric, post-tensioning, open web joists, etc.

TOOL STEEL—Water and oil hardening.



STEEL . ALUMINUM . PLASTICS . METALWORKING MACHINERY

NATION'S MOST COMPLETE SERVICE CENTERS IN PRINCIPAL CITIES COAST TO COAST

#### **Heat-Treating Process**

Increased tensile properties with little loss in ductility can be achieved for many alloy steels, report the developers of a new heat-treating proccess. For example, AISI 4340 has been heat treated to a tensile strength of 334,000 psi with an 11 pct elongation. Other claims for the process are improved fatigue life, corrosion resistance, and notch sensitivity.

#### Zinc-Base Dies

Comprehensive tests show that drop-forge dies, made of a zinc-base forming alloy, are tougher and require less frequent replacement than conventional dies. These dies are readily adaptable for shortrun operations on steel parts and on aluminum details which involve large quantity runs and difficult or critical sections.

#### Saturn Development

Defense officials are going to push development of the huge, new 1½ million-lb thrust Saturn rocket. The Saturn's thrust will be five times that of the largest rocket the U. S. now has available for space flights, and about twice that of the Soviet moon vehicle.

#### **New Finishing System**

A new process for trichlorethylene finishing will be unveiled in the near future. It consists of vapor degreasing for cleaning, followed by anhydrous phosphating, and painting with trichlorethylene-thinned paints. Thus, an unfinished part can move into the line, and come out finished, painted, dried, and ready for use.

#### Welding of Tantalum

Tantalum welding problems are being coped with at Battelle. Research reveals that porosity in the welds can be reduced by increasing the carbon content of the metal or by melting the tantalum in an arc furnace before welding. Re-

searchers also find that grain size can be reduced by as much as two-thirds by applying ultrasonic vibrations to parts being welded.

#### Spot Welding Control

A new control has been developed for use in resistance spot welding. Its basis is the relationship between the ultimate temperature within a weld and the voltage developed across that same weld. By holding the proper voltage across the weld, the desired internal temperature is produced. The control receives automatic feedback of information from the weld; then it makes the needed inprocess corrections.

#### Inspect Electronically

Look for wider use of electronic inspection methods, particularly on automated equipment. Measuring, weighing, and other decision problems are solved faster, with greater sensitivity and accuracy electronically, experts point out. Electronic methods will gage automatically to dimensional tolerances as small as 0.000020 in.

#### Separates Tungsten

Commercial-grade tungsten and molybdenum powders can be produced by a new and simple process, announced the Interior Department. Key to the process is the difference in voltages at which the two elements deposit out on cathodes during fused-salt-bath electrolysis. Molybdenum comes out at a lower voltage; a second cathode is then installed, voltage increased, and tungsten emerges from solution.

#### **Furnace Trends**

The electric furnace is very much in the thick of the current push for higher output steelmaking facilities. Refractory producers report a strong wave of interest in the electric furnace, and this constitutes a growing portion of the refractory market. Use of more hot metal, lighter scrap, and high iron-ore concentrates are the reasons for the gains in electric furnace economy.

#### Handling a hot job at a cool \$1400-a-year saving

They don't spare the belts around busy foundries like this one in the Midwest. And their shakeout conveyor was in a specially hot spot—handling smoking sand at temperatures well over 250°F, occasionally reaching a near-incandescent 450°F. Little wonder belt life averaged only 43 days.

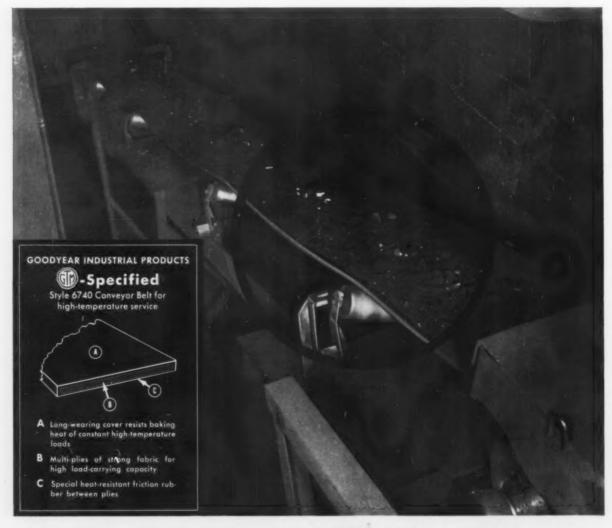
But that was before the G.T.M.—Goodyear Technical Man—appeared on the scene. His recommendation: Style 6740 conveyors especially designed to resist the usual cracking, charring effects of "cooking" heat.

The results: carefully kept records showed a succession of 5 of the G.T.M.'s belts averaging 154 days

apiece - more than 3½ times previous service. And that meant a yearly saving of exactly \$1.435.40.

Isn't this the kind of dollars-and-cents improvement you'd like to make in your shop? If it takes industrial rubber, the G.T.M.'s your man. Contact him through your Goodyear Distributor—or write Goodyear, Industrial Products Division, Akron 16, Ohio.

It's SMART TO DO BUSINESS with your Goodyear Distributor. He can give you fast, dependable service on Hose, V-Belts, Flat Belts and many other industrial rubber and non-rubber supplies. Look for him in the Yellow Pages under "Rubber Goods" or "Rubber Products."



GOOD YEAR

THE GREATEST NAME IN RUBBER

#### **Grave Duty**

Speaking of magnesium—as lots of people will be doing later this month when the association assembles in New York for its annual convention—Jerry Singleton, the group's executive secretary has a new market for tooling plate.

He concedes it'll never be a big user. "But then," he observes, "It just goes to show that you never know where a new market will pop up when you have a good product."

**Deep Down**—It seems, according to Jerry, that magnesium is on the verge of replacing burlap in cemeteries.

One major burial ground in New Jersey reports its 4x6 ft magnesium plates are working out very well, and they'll probably buy more.

Here's how they work: In opening a grave magnesium plates are put on the ground under the shoveled-up dirt. To refill the holes gravediggers merely bulldoze the dirt back, then manually lift the lightweight metal plates up and tap gently. Unlike the burlap, the magnesium will last indefinitely. And it leaves the grass practically unmarked.

#### The Destroyers

There are various types of business managers whose methods can wreck a company, according to a bulletin published by the Small Business Administration.

These destroyers are catalogued in the office's Management Aid No. 103:

The Detail-Hugger: Hardly a day passes without his presence distracting the mail room clerk. ("Have we got enough stamps?"), the secretaries ("How do you put a new ribbon on that new machine?"), the cafeteria food supervisor ("How long does it take to fix cole slaw"?).

He also is terribly interested in the amount of string used in packages, and the amount of gasoline used by the company truck.

The Conference Caller: This type won't let anyone order a dozen paper cups without the trappings of a time - killing executive summit meeting. He likes to hear his own voice, even if no one else does.

The Dream Merchant: He kills time dreaming (and worse luck, talking) about what he's going to do tomorrow, and so never has time to do anything today.

The Kibitzer: Killing his time is no problem. He just does it by looking over everybody's shoulder, and dropping in on departments "just to see how things are going." (They're going fine—when he's not around.)

The One-Track Manager: Charlie-One-Track loves business statistics. Figures fascinate him and he kills the day poring over them while the fate of the factory hangs in the balance.



"We've got it boiled down now you'll report to only one man—the unemployment compensation officer."

## CONTROL

ALUMINUM HOMOGENIZING TO + OR - 5° F.



#### R-S CARHEARTH FURNACE HANDLES 25 TONS PER DAY

Uniformity hour after hour . . . day after day with a variation of only plus or minus 5°F. That's the record set by an R-S gas fred, double end, carhearth forced convection homogenizing furnace at the Bohn Aluminum & Brass Co. This particular installation is homogenizing a charge of 50,000 lbs. of aluminum billets at a maximum temperature of 1150°F.

Other R-S Carhearth Furnaces now in use are handling production in excess of 80 tons daily and maintaining the same uniformity in every heat. These and many other specialized heat treating furnaces are designed, developed and built by R-S to reduce production time, cut costs and improve the quality of the finished product.

Why not put these savings to work in your plant? Write today for the booklet that points the way to better heat treating. Ask for RS-200. Send your request to . . .

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### Get fast delivery-order COMMERCIAL heads

COMMERCIAL tank heads, cold formed in steel dies, are more accurate than spun heads, yet actually cost you less. That's because their consistant uniformity makes fitting-up easier... welding faster. And, you get this advantage in every size and style—in fact, in every single head...just one or a whole carload.

For fast delivery, COMMERCIAL offers heads from stock made with a complete range of solid dies in all standard sizes from 12" to 72" O.D....in all popular gauges up to ½" thickness. Heads can be furnished for code or non-code pressure vessel construction from steels to meet the required specifications. Types fur-

nished include flanged-and-dished, ellipsoidal, hemispherical, flanged only, double dished and obround.

With over 30 years experience and ingenuity in cold forming of steel, COMMERCIAL produces heads with improved metal quality in presses up to 2000-ton capacity. Three plants—Youngstown, Chicago, Salt Lake City—strategically located in important steel producing centers, are keyed to expedite your order.

For full information on heads in stock for immediate delivery, write to Commercial Shearing & Stamping Company, Dept. K-41, Youngstown 1, Ohio.

Specialists in the shape of things to come

GOMMERGIAL shearing & stamping

#### **Word From Mitchell**

Sir—I liked very much what you said in your editorial, "Personal Responsibility: It's Greater Than We Think" (Sept. 24 issue).— James P. Mitchell, Secretary of Labor, Washington, D. C.

#### Strike Solution?

Sir—Many differing proposals have been put forth on the best and most equitable solution to the current steel strike. However, so far I have failed to see any proposal with which I would concur. I believe the study made by the Secretary of Labor was very fair and impartial. Possibly a solution can be arrived at from the facts he presented.

The steel industry should offer to extend the existing contract with no increase in wage rates and the understanding that the price of steel will immediately come down about \$10 a ton. In addition, the steel industry should offer to give labor half of any cost reductions obtainable by contract language changes which would permit more efficient operations.

Against Wage Hike — Secretary Mitchell showed that the wages in the steel industry have gone up more than the average during recent years and now rank near the top. So why are these workers entitled to a wage increase which will trigger another round of inflation?

On the other hand, he showed the return on capital in the steel industry is somewhat higher than normal. But the really serious problem is the loss of foreign markets because our steel sells for more than foreign steel.—W. T. Thompson, manager—U. S. office, Aktiebolager Volvo, Detroit, Mich.

#### **Russian Profits**

Sir—Having just returned from a trip to Russia, for the purpose of studying the Russian economy, I was interested in your article "What Powers Red Economy?" in a recent Report to Management.

Regarding profit sharing, it might interest you to know that 70 pct of the over-profit above planned profit is shared among the workers and 30 pct goes to the state. From planned profit, 98 pct goes to the state and 2 pct to the Director's Fund.

The bonus a worker can earn varies from a minimum of 40 pct to a maximum of 112 pct.

If a worker gets a production raising idea, when he is on piece work, he gets paid on the basis of his old quota for six months after the implementation of the new idea. Other workers in the same plant, doing the same job, have their quota raised immediately on implementation of the new idea. There are also other ways that monetary incentives are used.—T. D. Nast, president, All-State Welding Alloys Co., White Plains, N. Y.



"All the boys at the plant sure miss that wild clowning around you used to do for them."



WALTER CLEMONS, Furnace Application Engineer, says . . .

## LET'S TALK ABOUT FURNACE FLEXIBILITY

Versatility of Operation multiplies the value and economy of Hayes Type LR Preheat and Type CG Superheat Furnaces...designed to handle almost limitless hardening and annealing applications. With Hayes external generating equipment, these two standard furnaces are also adaptable to reducing as well as oxidizing atmospheres... for treating virtually

all types of steels and many non-ferrous metals.

Hayes Type LR Preheut Furnace — Standard Temperature Range 1350-2000° F

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"Spare-Tire" Furnaces, they're often called—because each features Hayes patented "Certain Curtain" atmosphere control, ready to act as a stand-by when the external generator is not in use. Muffle and pre-

heat chamber can be added easily for critical heat treating jobs requiring low dewpoint atmospheres.

Hayes Type CG Superheat Furnace — Standard Temperature Range 1600-2400° F

Results Guaranteed! If you're looking for quality, economy, plus furnace flexibility . . . let Hayes engineers go to work for you. You'll

get complete service right from our laboratory to your production line.

Hayes Type IGL Endothermic Generator — for reducing and carbon potential atmospheres. Sizes from 100 to 20,000 CFH.

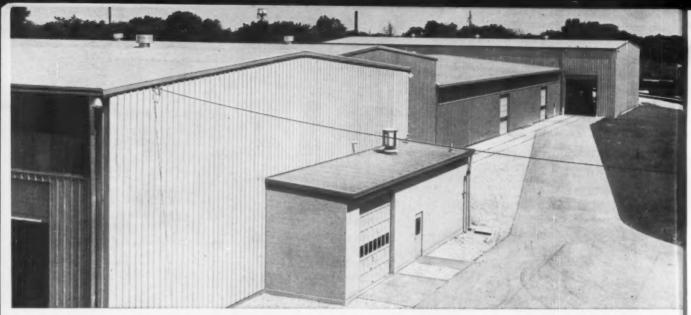


Get the facts - Write now for Bulletin 461

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It Pays To See Hayes for metallurgical guidance, lab. facilities, furnaces, atmos. generators, gas and liquid dryers.





Spacious, clear-span interiors



Beautiful new Butlerib panels

## This new factory makes Butler factory buildings an even better buy

Here's one of the newest, most modern metal fabricating plants in the country. It's Butler's new factory in Galesburg, Illinois, built to produce new Butlerib™ metal cover panels for the Butler system of building. A unique combination of deep and shallow corrugations makes Butlerib panels the strongest, most rigid and most weathertight cover ever offered on Butler industrial and commercial buildings. It's a cover that's as beautiful as it is practical.

And, thanks to the streamlined efficiency of this new factory with its high-speed roll-forming equipment, Butler offers this new, superior cover as standard material on Butler buildings—at no increase in price.

This new Butler factory is also a good example of the design latitude the Butler system of building permits. Butler engineers developed the work flow pattern first. Then, with standard Butler components, they designed the building to enclose the flow pattern.

Butler Low-Profile (LRF) rigid frames form the structural system. These frames span areas up to 120 feet, yet have a low, modern 1-in-12 roof pitch. Butlerib walls and roof form a cover that gives maximum protection, yet requires only a minimum of maintenance.

If you're planning industrial construction, get the full story on the Butler system of building today. It's the pre-engineered system of building that saves you time and money, but doesn't limit plant design. And, with new Butlerib panels, it's an even better way to build . . . still the lowestcost way to build well.

For full details, contact your Butler Builder. Ask him about Butler financing, too. He's listed in the Yellow Pages under "Buildings" or "Steel Buildings." Or write direct.



#### BUTLER MANUFACTURING COMPANY 7376 East 13th Street, Kansas City 28, Missouri

Manufacturers of Metal Buildings . Equipment for Farming, Oli Transportation, Outdoor Advertising . Contract Manufacturing

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#### COMING EXHIBITS

Metal Show — Nov. 2-6, International Amphitheatre, Chicago. (American Society for Metals, 7301 Euclid Ave., Cleveland 3.)

#### **MEETINGS**

#### OCTOBER

American Society of Tool Engineers—Annual meeting, Oct. 8-10, Chase-Park Plaza Hotels, St. Louis. Society headquarters, 10700 Puritan Ave., Detroit 38, Mich.

Conveyor Equipment Manufacturers Assn. — Annual meeting, Oct. 10-13, Grand Hotel, Point Clear, Ala. Association headquarters, One Thomas Circle, Washington, D. C.

Farm Equipment Institute — Annual convention, Oct. 11-14, Queen Elizabeth Hotel, Montreal, Canada. Institute headquarters, 608 S. Dearborn St., Chicago.

American Society for Testing Materials—Pacific area national meeting, Oct. 11-16, Sheraton - Palace Hotel, San Francisco, Calif. Society headquarters, 1916 Race St., Philadelphia.

Wire Assn. — Annual convention, Oct. 12-15, Statler Hotel, Cleveland. Association headquarters, 453 Main St., Stamford, Conn.

Society of Plastic Engineers, Inc.— National technical conference, Oct. 13-14, Ambassador Hotel, Los Angeles, Calif. Society headquarters, 65 Prospect St., Stamford, Conn.

Steel Castings Institute of Canada—Fall meeting, Oct. 15-16, Seigniory Club, Montrello, P. Q., Canada. Institute headquarters, 568 Booth St., Ottawa, Canada.

Foundry Equipment Mfrs. Assn., Inc.—Annual meeting, Oct. 15-17, Greenbrier Hotel, White Sulphur Springs, W. Va. Association head-quarters, One Thomas Circle, Washington 5, D. C.

Scientific Apparatus Makers Assn.

—Mid-year meeting of Laboratory and Optical sections, Oct. 18-21, (Continued on P. 16)





## CURTISS-WRIGHT THERMOCHROM

Here's a foolproof way to check temperatures during welding or heat-treating operations . . . use new Thermochrom temperature-indicating color crayons.

Measurement of temperatures at stages between 150° and 1240° F. is possible with the different crayons in the Thermochrom family. Each crayon's wrapper shows its point-of-change temperature and the color that results. This color change does not "melt away" but gives a permanent record of the temperature reached, making it simple for anyone to check welding temperatures at a later time. Every Thermochrom crayon is usable to its full length. Priced at only \$2.00 a crayon.

Use Thermochrom to solve your "heat checking" problems. For further information regarding where to buy and how to use Thermochrom, write to:



In Canada contact CANADIAN CURTISS-WRIGHT LIMITED, 1980 SHERBROOKE STREET WEST, MONTREAL, P. Q., CANADA In countries other than U.S.A. and Canada contact EXPORT DIVISION, CURTISS-WRIGHT CORPORATION, 50 ROCKEFELLER PLAZA, NEW YORK 20, NEW YORK

### EXHIBITS, MEETINGS (Continued from P. 15)

Lake Placid Club, Essex County, N. Y. Association headquarters, 20 N. Wacker Drive, Chicago.

The Electrochemical Society, Inc.
—Fall meeting, Oct. 18-22, Deshler-Hilton Hotel, Columbus, O. Society headquarters, 1860 Broadway, New York 23, N. Y.

The Magnesium Assn. — Annual convention, Oct. 19-20, Hotel Roosevelt, New York. Association headquarters, 122 E. 42nd St., New York 17, N. Y.

American Society of Lubrication Engineers and American Society of Mechanical Engineers—Joint lubrication conference, Oct. 20-21, Sheraton - McAlpin Hotel, New York. Society headquarters, 84 E. Randolph St., Chicago.

American Standards Assn. — National conference on standards and annual meeting, Oct. 20-22, Sheraton-Cadillac Hotel, Detroit. Association headquarters, 70 E. 45th St., New York.

Association of Roller & Silent Chain Manufacturers — Fall meeting, Oct. 21-22, Hotel Roosevelt, New York. Association headquarters, 3343 Central Ave., Indianapolis.

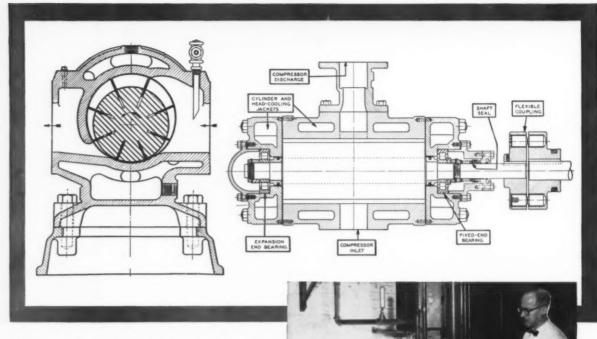
Non - Ferrous Founders' Society— Annual meeting, Oct. 22-24, Bedford Springs Hotel, Bedford, Pa. Society headquarters, 1604 Chicago Ave., Evanston, Ill.

American Machine Tool Distributors' Assn.—Annual meeting, Oct. 25-27, The Statler Hotel, St. Louis. Association headquarters, 1900 Arch St., Philadelphia.

American Gear Manufacturers Assn.—Semi-annual meeting, Oct. 25-28, The Edgewater Beach Hotel, Chicago. Association headquarters, One Thomas Circle, Washington 5, D. C.

Rolling Mill Machine & Equipment Assn.—Annual meeting, Oct. 26, Duquesne Club, Pittsburgh. Association headquarters, 1026 Farmers Bank Bldg., Pittsburgh.





Hard service never affected this Fuller rotary's original output—230 cfm. of air at 90 lb. G., reports Mr. Schott, chief engineer, Thomas C. Wilson, Inc., Long Island City, N.Y.

## FULLER ROTARY COMPRESSOR RUNS 13 YEARS WITHOUT DOWNTIME

A Fuller rotary at Thomas C. Wilson, Inc. got its first maintenance shutdown recently, for renewal of roller bearings and rotor vanes—after running without downtime since 1945.

4 years of 24-hour service. The Wilson plant makes tube cleaning equipment, tube expanders and portable pneumatic tools, and so makes heavy daily demands on shop air. For the first four years, three-shift operation kept the Fuller rotary running round the clock. Since 1949, it's been working eight-hour shifts. Simple design means trouble-free service. Besides

bearings, the only moving parts in a Fuller vane-type rotary compressor are the cylinderical rotor and the blades. These compensate for wear automatically. Cylinder head slips off, permitting blade and bearing inspection in a matter of minutes.

Compact and vibration-free. Direct-drive system saves space. Simple, rugged design gives constant service without extensive supervision. Thus, Fuller rotaries can be installed out-of-the-way—on upper floor, on balconies, in basement corners, using low-cost, light-weight foundations.

Write today for detailed information on the full line of Fuller rotary compressors for in-plant services, gas gathering, and industrial refrigeration.



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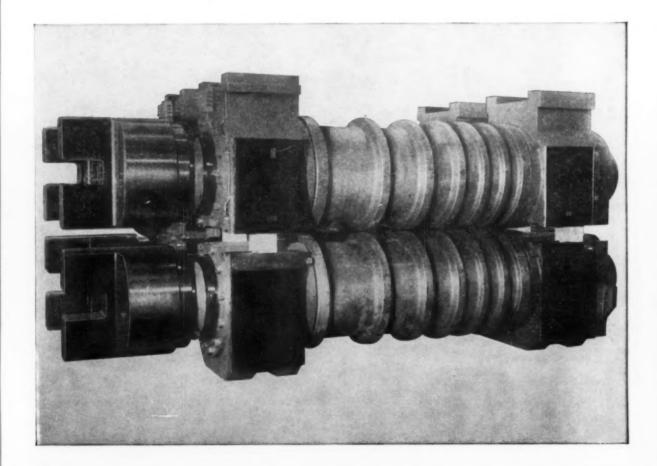


PIONEERS OF HIGH-EFFICIENCY VANE TYPE ROTARY COMPRESSORS SINCE 1930

### Ready to Roll ...

• another set of thoroughbreds—this time for one of America's largest steel producers...ready to carry a top production load. BIRDSBORO "breeding" starts way back in the laboratory, where advanced research results in a specialized family of rolls to meet the toughest mill requirements. BIRDSBORO rolls are favorites in all production races... and they can be real profit winners for you. Sales Department, Engineering Department and Mfg. Plant: Birdsboro, Pa., District Office: Pittsburgh, Pa.





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STEEL MILL MACHINERY • HYDRAULIC PRESSES • CRUSHING MACHINERY • SPECIAL MACHINERY • STEEL CASTINGS • Weldments "CAST-WELD" Design • ROLLS: Steel, Alloy Iron, Alloy Steel

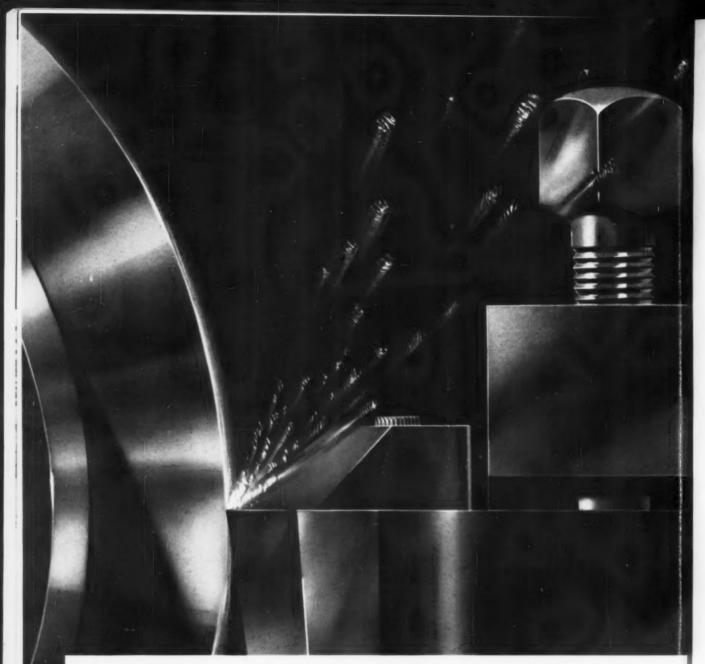


Illustration of Malleable casting being turned at 1,400 surface feet per minute with a 0,100° depth of cut using an oxide tool.

#### Machinability is (Malleable

It's the finished cost of machined components that's important to you. Remember then . . . Malleable iron is more machinable than any other ferrous metal of similar properties. With Malleable castings you'll reduce machining time as much as  $50\%\dots$  increase tool life up to  $250\%\dots$  get unexcelled surface finishes  $\dots$  and end your reject problems.

To find out how much you can cut your costs and improve your profits, contact one of the progressive firms that displays this symbol-MEMBER

If you wish, you may inquire direct to the Malleable Castings Council, Union Commerce Building, Cleveland 14, Ohio, for information.

MALLEABLE CASTINGS COUNCY

## Machining Malleable Castings—Important Key to Cost Reduction

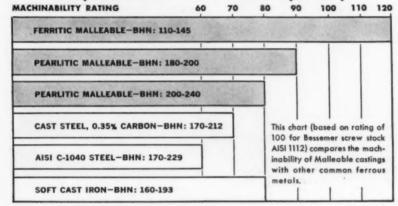
### Malleable castings — the most machinable of all ferrous metals—cut quality components costs

Production men know that machining time, power consumption and rejects drop with the use of Malleable iron castings, while tool life and profits shoot up. The reason is simple: Malleable iron is the most machinable of all ferrous metals of similar properties.

The following important factors work together to give Malleable such machin-

ing superiority: Malleable's microstructure contains tiny, evenly distributed nodules of carbon that help cutting tools quickly break the removed metal into small (Class A) chips; the carbon also acts as a lubricant, prolonging tool life; uniformity of properties throughout every casting permits running at optimum machining conditions.

#### Comparison Shows Malleable's Superiority



#### Typical Example Shows Savings of 70% to 250%

The conversion of automotive universal joint yokes from steel forgings to pearlitic Malleable castings typifies the savings provided by Malleable castings. Costs for the rough pieces and performance characteristics of the two materials are comparable. However, the castings are much more economical to machine. Considering that maching often costs two to four times as much as the rough parts, the economy resulting from using Malleable castings is substantial.



Conversion of this universal joint yoke to a Malleable casting increased production, lowered direct and tool room labor, and cut tool replacement. One volume user of Malleable joint yokes reports the following savings after changing from steel to Malleable castings: 70% longer tool life in broaching the splines; 250% more pieces cut by the nut seat cutters; 149% more pieces in turning and facing the hub; an increase of 100% in production between wheel dressings in grinding the hub; 246% greater production in drilling the cross holes.

In each of these operations, the change to Malleable castings cuts direct production time by reducing the frequency of tool changes. Tool room labor and tool replacement are both reduced to fractions of their previous costs.

Throughout the metalworking industry, part after part is now being initially designed of Malleable or converted from other materials to take advantage of Malleable's unrivalled machinability...to produce better parts at lower costs.

#### New Information Now Available on Machining Malleable

Data Unit 106—Machinability of Malleable Castings—can be obtained from any member of the Malleable Castings Council, or from the Malleable Castings Council, Union Commerce Building, Cleveland 14, Ohio.

#### These companies are members of the



#### CONNECTICUT

Connecticut Mail. Castings Co., New Haven 6 Eastern Maileable Iron Co., Naugatuck New Haven Maileable Iron Co., New Haven 4

#### DELAWARE

Eastern Malleable Iron Co., Wilmington 99

#### HIDIOI

ILLINOIS

Central Fdry. Div., Gen. Motors, Danville
Chicago Malleable Castings Co., Chicago 43

Moline Malleable Iron Co., St. Charles
National Mall. and Steel Castings Co.,
Cicero 50

Peoria Malleable Castings Co., Peoria 1 Wagner Castings Company, Decatur

#### INDIANA

Link-Belt Company, Indianapolis 6 Muncie Malleable Foundry Co., Muncie Terre Haute Mall. & Mfg. Corp., Terre Haute

#### MASSACHUSETTS

Beicher Malleable Iron Co., Easton

#### MICHIGAN

Albion Malleable Iron Co., Albion Auto Specialties Mfg. Co., Saint Joseph Cadillac Malleable Iron Co., Cadillac Central Fdry. Div., Gen. Motors, Saginaw

#### MINNESOTA

Northern Malleable Iron Co., St. Paul 6

#### NEW HAMPSHIRE

Laconia Malleable Iron Co., Laconia

#### NEW JERSEY

Meeker Foundry Company, Newark 4

#### NEW YORK

Acme Steel & Mall. Iron Works, Buffalo 7 Frazer & Jones Company Division Eastern Malleable Iron Co., Solvay Oriskany Malleable Iron Co., Inc., Oriskany Westmoreland Mall. Iron Co., Westmoreland

#### оню

American Malleable Castings Co., Marion Canton Malleable Iron Co., Canton 5 Central Fdry. Div., Gen. Motors, Defiance Dayton Mall. Iron Co., Ironton Div., Ironton Dayton Mall. Iron Co., Ohio Mall. Div., Columbus 16 Maumee Malleable Castings Co., Toledo 5

National Mall. and Steel Castings Co.,
Cleveland 6

#### PENNSYLVANIA

Buck Iron Company, Inc., Philadelphia 22 Erie Malleable Iron Co., Erie Lancaster Malleable Castings Co., Lancaster Lehigh Foundries Company, Easton Meadville Malleable Iron Co., Meadville Pennsylvania Malleable Iron Corp., Lancaster

#### TEXAS

Texas Foundries, Inc., Lufkin

#### WEST VIRGINIA

West Virginia Mall. Iron Co., Point Pleasant

#### WISCONSIN

Belle City Malleable Iron Co., Racine Chain Belt Company, Milwaukee 1 Federal Malleable Company, West Allis 14 Kirsh Foundry Inc., Beaver Dam Lakeside Malleable Castings Co., Racine Milwaukee Malleable & Grey Iron Works, Milwaukee 46



The job: Produce five spherical reactors-Catalytic Reforming Units-to convert low octane gasolines to higher octane motor fuels.

The job site: Esso Standard Oil Company's new Powerforming Unit at Baton Rouge, Louisiana.

The job-team: Esso Research and Engineering Company prepared the basic design. Bechtel Corporation, San Francisco, developed the basic requirements and designed the various details. Wyatt Metal & Boiler Works, Inc., produced the shop drawings and fabricated the units in their Houston shops.

CF&I's Claymont, Delaware plant produced the alloy steel plates . . . for the shells and for manheads and nozzle connections.

The specifications: The CF&I-Claymont Alloy Steel Plates were manufactured to ASTM Specifications for Carbon-Molybdenum and Chrome-Molybdenum Steel ... designed for high pressure and high tem-

perature applications, with increased tensile and creep strength provided in accordance with varying safety factor requirements.

Minimum plate thickness-17/8 inches. I.D. of reactors-17 feet 11/2 inches.

Net weight of each shell, without internal insulation-95,000 pounds.

The result: Another job well done through co-operative effort.

The CF&I-Claymont plant is equipped and ready to work with you by producing plate for any job, to any specification . . . in carbon, alloy or stainless-clad steels in the dimensions, gage and shape of your choice. What's more, Claymont's completely-equipped Fabrications Shop turns out partially or full-fabricated steel plate components (for machinery or structural applications) in accordance with user requirements...in small or large-quantity lots.

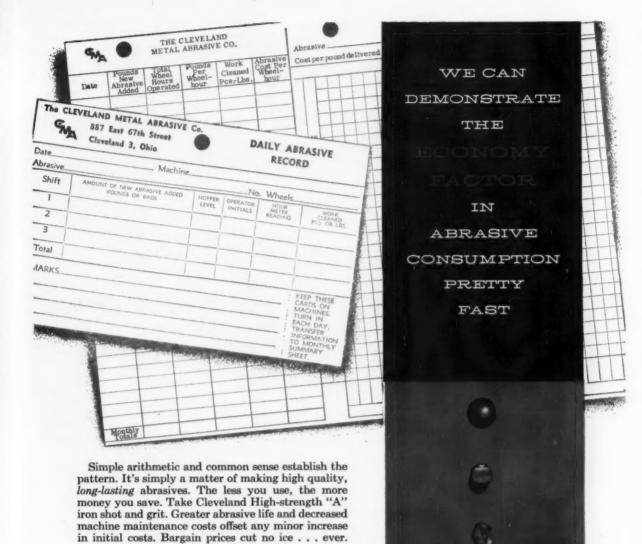
Get complete information and prompt service through the CF&I sales office nearest you.

CF&I-CLAYMONT PRODUCTS: Carbon Steel Plates - Alloy Steel Plates - Stainless-Clad Plates - CF&I Lectro-Clad Nickel Plated Steel Plates • Clay-Loy High® Strength Low Alloy Steel Plates • Flanged and Dished Heads • Manhole Fittings and Covers • Fabricated Steel Plate Products • Large Diameter API Pipe

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Prove to yourself the savings you get from this, and other, Cleveland Metal Abrasives. Write—and ask for our new abrasive cost system, which our engineers can quickly establish for each machine, at no cost to you.

Also write us today for more information, together with new catalog No. 159, or call our nearest representative.

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- 5. Hi-Strength "B"
- 6. Chilled Iron
- 7. Cut Wire



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World's Largest Production Capacity Teletype: CV 901



Like other high-temperature steel-mill bearings, mill run-out-table bearings stand up longer with Mobilplex EP.

# Mobilplex

The Multi-Service Grease with unique Calcium EP Complex. Never before in a single lubricant such a wide range of use...such a margin of superiority ... such a potential for maintenance savings.

Below: Infra-red heat lamp causes ordinary grease to run out of bearing. Mobilplex EP in bearing at left is unaffected.



Outstanding heat resistance is one of the many important properties of Mobil's new Multi-Service Grease—Mobilplex EP. In your steel mill you'll find it ideal for work-roll bearings, hot-coil-conveyor bearings and hot mill run-out-table bearings. Even at temperatures in the range of 300 F. it stays on the job. Mobilplex EP also offers good pumpability at low temperatures and low feed rates, extra protection against wear, water and rust. It is a singularly tenacious and adhesive lubricant.

This Multi-Service grease has outstanding oxidation resistance as well as excellent storage and structural stability. These qualities, plus the great versatility of Mobilplex EP, make it useful throughout the steel mill.

Mill operators throughout the country are finding Mobilplex EP extremely effective in extending bearing life and protecting production schedules. In addition, they're saving more than with ordinary multi-purpose greases because Mobilplex EP makes it possible to reduce application frequency, simplify storage and handling procedures.

Contact your Mobil representative for full details. He can show you results of laboratory performance tests of Mobilplex EP and five competitive extreme pressure greases. You'll see why Mobilplex EP is rated tops!

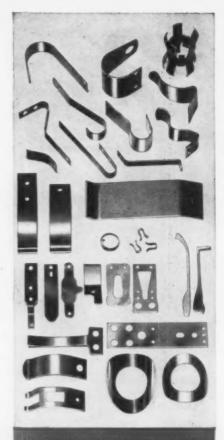
#### MULTI-SERVICE ABILITY OF MOBILPLEX EP

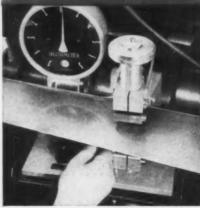
ANTI-FRICTION BEARINGS. (horizontal and vertical). Temperatures in the range of 300 F. Heavy or shock loads. Water contamination. Speeds—low, normal, high.

PLAIN BEARINGS. All normal mechanical and operating conditions. Temperatures in the range of 300 F. Waterwash. Heavy or shock loads.

DISPENSING AND APPLICATION DEVICES
Transfer pumps. Hand and power guns (long lines).
Central greasing systems.







## SANDVIK SPRING STEEL QUALITY

## **Earns Its Pay By** PRECISE PERFORMANCE

Where performance is important, Sandvik spring steel quality is well worth its price. Many spring steel users have found that Sandvik delivers the exact performance they want under their tools and in their products.

Sandvik's purity, small lot processing and painstaking quality control assures your money's worth in consistent quality performance.

In addition to the wide variety of qualities and sizes carried in stock, Sandvik has local facilities for customprocessing and finishing to your require-

For specific physical properties plus accurate flatness, straightness, width, gauge and edge finish, specify a Sandvik spring steel.

Send for free brochure on various Sandvik cold rolled and hardened and tempered strip steels.

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## WHO FORGES THE TOUGH ONES? and dynamic balances them, too?

To further National Forge's reputation for producing precise forgings, we've installed one of the largest, most accurate dynamic balancing machines in use. Our American-Trebel has a 33,000-pound, 60-foot capacity.

Pictured on the machine is a 42 ft. propeller shaft that has been forged, machined, and hollow bored—all operations done in our National Forge plant NF specialists

are shown balancing this gigantic 15,500 lb. shaft.

If you want one responsible source to produce and control the quality of your forgings. from melting and forging the steel through machining and dynamic balancing... call National Forge. Let us quote on your next job—and prove "who forges and dynamic balances the tough ones...best!".

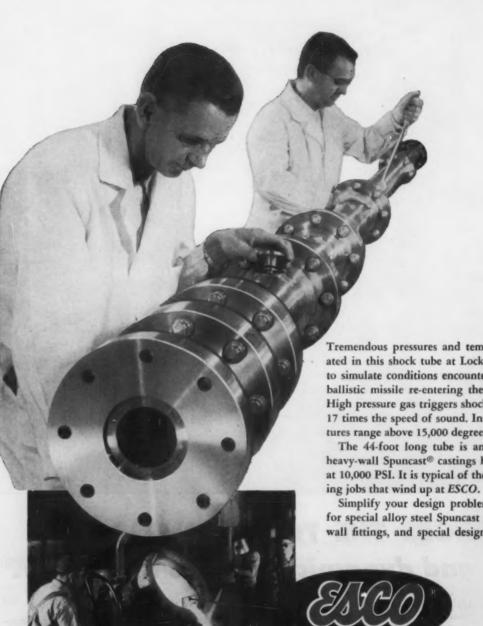


NATIONAL FORGE COMPANY

IRVINE, WARREN COUNTY, PA.

#### ESCO CENTRIFUGAL CASTINGS KEEP

## **MACH 17 IN A TUBE!**



Tremendous pressures and temperatures are generated in this shock tube at Lockheed Aircraft Corp., to simulate conditions encountered by a long-range ballistic missile re-entering the earth's atmosphere. High pressure gas triggers shock waves which travel 17 times the speed of sound. Instantaneous temperatures range above 15,000 degrees F.

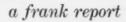
The 44-foot long tube is an assembly of ESCO heavy-wall Spuncast® castings hydrostatically tested at 10,000 PSI. It is typical of the many exacting cast-

Simplify your design problems by calling ESCO for special alloy steel Spuncast pipe, standard heavy wall fittings, and special design fittings and valves.



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on new techniques and new equipment for the most advanced automatic and semi-automatic CO<sub>2</sub>-shielded welding processes.

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a frank report

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who's who in CO2







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C-OMANUAL BUTTON



DER

#### YES! Gun-trigger welding speed

Operator works with a visible arc, welding joint always visible, no excuse for misplaced welds. The CO<sub>2</sub> "gun" or "head" automatically compensates for arc length, puts down metal at rates up to 30 lbs./hr. Work is never interrupted by a need to chip slag or clean flux. Just pull the trigger (or push the button) and you're off!

#### YES! New production flexibility

A. O. Smith CO<sub>2</sub> processes can be used on a wide range of gages, from approximately 0.075-inch to 1½-inch plate, on fillet, lap, butt welds, or for steel casting repair. Simplicity of operation coupled with high weld quality leads to many new applications. Operator enthusiasm for the process keeps production jobs rolling.

## advantages with CO2?

#### YES! Substantial cost savings

Process efficiency depends, of course, on proper application. When the application is right, the exceptional deposit rates, the low cost of CO<sub>2</sub> compared with that of other shielding gases, and the low gas consumption rate—add up to substantial savings.

#### YES! Strength and ductility

Use of CO<sub>2</sub> (carbon dioxide gas) as a shielding envelope produces welds that are strong and ductile. Extensive tests and field applications prove that the CO<sub>2</sub> processes are here to stay — for lów-cost, high-speed welding of mild and medium carbon steel.

## 3 CO<sub>2</sub> welding processes!

#### A semi-automatic hand-gun process.

Consists of a 600-amp Constant-Potential power source; an integrated wire-drive unit; a lightweight, perfectly balanced hand gun.

#### A fully automatic process.

For high production mild steel welding. Consists of exceptionally efficient and dependable 600-amp CP power source; control panel; fully automatic welding head.

#### A semi-automatic hand-gun process.

Consists of the basic C-OMANUAL equipment, with the addition of a cycle timer and specially designed nozzle fittings. Produces button welds of all types with speed and quality.



## Let's look at this A.O.Smith

C-O manual!

#### what?

a semi-automatic hand-gun welding process that uses CO<sub>2</sub> as a shielding envelope with specially developed CO<sub>2</sub> wires . fast, flexible, money-saving.

#### how?

The operator sets his voltage and wire speed, positions his gun, and pulls the gun trigger.

That's all there is to it.
Visible arc assures weld quality.

### why?

Speed, quality, low cost, and operator enthusiasm. Permits production of high quality welds even by less experienced operators. With correct applition, this A. O. Smith CO<sub>2</sub> process cannot be excelled.



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O Copinal properties

### GUN

Featherweight, pistol-grip hand gun (includes hose and cable assembly) — as easy to use as pointing a finger. Water-cooled, without "O" rings, it eliminates leakage troubles. All connections are fully protected. Changing wire sizes is fast and simple.

### WIRE DRIVE UNIT

Can be mounted on top of power source. Consists of mechanically governed wire feed motor, gearmotor for remote wire feed speed change, dual drive wire feed rolls, post-purge gas and water timer and solenoids, safety water pressure switch, control relays.



A. O. Smith 600 amp continuous duty CP welder. Slope Control provides tap switch adjustment of output characteristics from very flat (.6 volts per 100 amperes droop) to very drooping (8 volts per 100 amperes) slope. Widest voltage range, 0 to 45.4 volts at rated load. Built-in 2 KVA—115-230 volt control transformer provides power for accessories. Fixed 180 amp connection for stick electrode tacking.

### WIRE LOADING

As easy as changing a record on your record player. A. O. Smith automatic welding wire designed specifically for use with CO<sub>2</sub>, takes only a few minutes to change. Keeps the job rolling with minimum downtime. Wire is available in reels, coils, Pay-off Paks.

### THE "PACKAGE"

The complete package consists of the 600 amp Constant Potential power source, wire drive unit and hand gun, connected to the wire drive unit by gas and water hose, water cooled welding power cable, wire feed conduit cable and remote control switch. Also included are wire drive swivel mount and power cable.

Optional equipment includes: Cooling water recirculator, CO<sub>2</sub> pressure regulator and flowmeter, and Stellarweld reactor which provides a variety of arc characteristics for various applications.











C-OMATIC . . . is the original fully automatic CO2 welding process, offering all of the many advantages of CO2 welding plus a history of automated performance unmatched in industry. Many units installed and operating every day are your assurance of satisfaction.

Primary C-OMATIC components consist of an A.O. Smith 600 ampere Constant Potential power source; compact control panel; and rugged automatic head. Secondary components include all necessary gas, water and power cables; a choice of specially designed CO2 welding wires in any diameter and package size; all necessary fittings, gages, etc.



Just a voltage adjustment . . . on the A. O. Smith 600 ampere Constant Potential power source. Two knobs on the front of the unit provide "coarse" and "fine" voltage to fractions of a volt. Slope Control provides additional voltage regulation to fit any job requirement. 99



**AUTOMATIC HEAD** feeds weld wire (132-in. to 532-in. sizes) at speeds to match job requirements. Simple adjustment for variations in the wire's lead and trail positions.



CONTROL PANEL is a portable pushbutton station for automatic operation of the welding head. Has vernier wire adjustment. Mounts easily anywhere in view of operator. Controls, stop, start, inch-up, inch-down, amperage and wire-feed speed.







### ee Just set one knob . . .

on the compact control panel. A twist of the wrist takes care of both amperage and wire feed speed. Heavy duty start-stop buttons, a variable crater fill control. voltmeter and ammeter dials make this the simplest and most foolproof unit in the industry.



### That's all there is to it!

Push a button and go. Automatic head was designed for high speed production where downtime is costly. Connections are all plainly marked and keyed. Head has infinite number of adjustments. And reel changing takes only a few seconds.

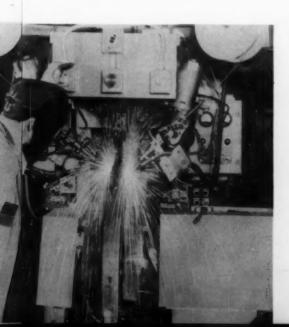
### full automation for CO2 welding



POWER SOURCE is full 600-amp CP welder with the widest voltage range available — 0 to 45.4 volts. Instant striking, no sticking. Slope Control for infinite adjustment.



COMPLETE "PACKAGE" for the
A. O. Smith C-OMATIC process includes
CP power source, remote control panel,
automatic welding head, nozzle, three
position mount and all necessary
hoses, cables and fittings.



### TWO C-OMATIC HEADS MOUNTED FOR SIMULTANEOUS WELDING

Automotive front cross bar longitudinal weld, with the heads mounted in the 3 and 9 o'clock positions. The irregular shaped piece is rotated between the heads. At the high speed of travel (185 ipm vs. 50 ipm hand arc), the wire alignment to the seam is critical; therefore electronic tracers have been incorporated into the fixture to assure proper alignment. Tacking was eliminated.

See following pages for \*Application Charts \*Physical Data A.O.Smith

C-O manual

C-O matic

# APPLICATION DATA CHARTS



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LAP JOINTS



Stock Thick- ness A	Wire Dia.	Amps	Voits	Travel Speed IPM	Weld Posi- tion	Dep. Rate Lbs/Hr	Notes
1/16"	3/64" 1/16" 3/64"	260/300 390/420 240/300	28-30 24-31 26-30	100-120 140-160 110-130	10-15° D.H. 10-15° D.H. Flat	12.5-17	0-10° trail 0-10° trail 0- 5° lead
1/8"	5/64" 1/16" 1/16"	580/600 450/520 380/420	30-32 29-32 26-30	120-150 150-160 70-90	10-15° D.H. 10-15° D.H. Flat	18-24	0-10° trail 0-10° trail 0- 5° lead
3/16"	1/16" 5/64"	420/480 480/540	29-32 29-32	40-60 50-70	0-5° D.H. 0-5° D.H.		0-10° trail 0-10° trail

A. O. Smith automatic wire No. CO-86 was used in all the above instances

HORIZONTAL LAP JOINTS



Stock Thick- ness A	Wire Dia.	Amps	Volts	Travel Speed IPM	Weld Posi- tion	Dep. Rate Lbs/Hr	Netes
1/8"	1/16" 5/64"	440/480 480/500	27-32 28-30		10-15° D.H. 10-15° D.H.		0 to 8° trail 0 to 8° trail
3/16"	1/16" 5/64"	420/480 540/590	27-32 28-32		10-15° D.H. 10-15° D.H.		0 to 8° trail 0 to 8° trail

HORIZONTAL FILLETS



Fillet Size A	Wire Dia.	Amps	Veits	Travel Speed IPM	Weld Posi- tion	Dep. Rate Lbs/Hr	Notes
1/8"	1/16"	340-380	32-34	35-45	Flat	10-14	Nozzle at 45°
1/4"	1/16"	350/400	32-34	30-40	Flat	12-16	Nozzle at 45°
5/16"	1/16"	360/420	32-36	25-35	Flat	13-17	Nozzle at 45°
3/8"	1/16"	360/420	34-38	15-20	Flat	13-17	Nozzie at 45°

HORIZONTAL FILLETS MULTI-PASS



ayer	Wire Dia.	Amps	Velts	Yravel Speed IPM	Weld Posi- tion	Dep. Rate Lbs/Hr	Notes
1	1/16"	360/420	32-35	20-25	Flat	13-17	0-5° trail
2	1/16"	370/430	33-37	25-30	Flat	13-17	0-5° trail
etc.	1/16"	370/430	33-37	25-30	Flat	13-17	0-5° trail

POSITIONED FILLETS



Fillet Size A	Wire Dia.	Amps	Voits	Travel Speed IPM	Weld Posi- tion	Dep. Rate Lbs/Hr	Notes
1/4"	1/16"	420/440	35-38	25-30	Flat	14-19	0-10° trail
3/8"	1/16"	460/480	38-42	20-30	Flat	15-22	0-10° trail
1/2"	1/16"	500/520	38-42	15-18	Flat	18.5-25	0-10° trail

A. O. Smith automatic wire No. CO-86 was used in all the above instance:



Take a close look at some typical CO<sub>2</sub> applications

### POSITIONED MULTI-PASS FILLETS

rail

rail ead

rail ead trail trail

trail

trail trail

45°

45°

45°

45°

rail

rail

trail



### Weld Posi-tion Dep. Rate Lbs/Hr Wire Dia. Layer 1/16" 15-18 Flat 18.5-25 500/520 40-42 2 1/16" 40-42 10-15 500/520 Flat 20-26 3&4 1/16" 500/520 40-42 15-20 Flat 18.5-25

A. O. Smith automatic wire No. CO-86 was used in all the above instance:

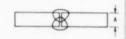
### BUTT WELDS (Steel Back-up)



Stock Thick- ness A	Wire Dia.	Amps	Velts	Travel Speed IPM	Weld Pesi- tion	Gap B	Dep. Rate Lbs/Hr	Pene- tration
1/8"	1/16"	430/450	29-32	65-75	Flat	0	14	100%
3/16"	1/16"	490/510	32-35	45-55	Flat	.0	18	100%
5/16"	1/16"	550/570	32-35	40-50	Flat	0	22	100%
3/8"	1/16"	560/580	31-34	40-45	Flat	1/16"	23	100%

A. O. Smith automatic wire No. CO-86 was used in all the above instances.

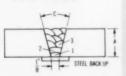
### BUTT WELD (Both Sides)



Stock Thick- ness A	Wire Dia.	Amps	Veits	Travel Speed IPM	Weld Pusi- tion	Dep. Rate Lbs / Hr	Netes
3/8"	1/16"	410/430	32-36	20-25	Flat	12-16	Weld on both sides at the same conditions
1/2"	1/16"	480/500	32-36	15-20	Flat	16-19	Same conditions

A. O. Smith automatic wire No. CO-96 was used in all the above instances.

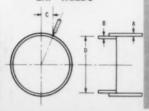
### SPACED "V" BUTT WELDS



Stock Thick- ness A	Layer	Wire Dia.	Amps	Velts	Travel Speed IPM	Weld Posi- tion	Dep. Rate Lbs/Hr	Angle
3/8"	1	1/16"	420-480	29-31	15-18	Flat	16-22	30°
5/8"	1&2	1/16"	420-480 420-480	29-31 29-31	15-20 20-25	Flat Flat	16-22 16-22	30°
3/4" to 1-1/2"	1 2 3 etc.	5/64" 5/64" 5/64"	440-520 450-480 450-480	37-40 35-38 35-38	10-15 7-10 10-15	Flat Flat Flat	17-23 17-23 17-23	60°

A. O. Smith automatic wire No. CO-86 was used in all the above instances.

### CIRCUMFERENTIAL LAP WELDS



Thi	eck- ick- iss B	Amount of Flood G	ðia. D	Wire Dis.	Amps	Volts	Travel Speed IPM	Dop. Rate Lbs/Hr
.088"	.154"	2-7/8"	12"	5/64"	550/560	30	120	-19
.088"	.147"	2-5/8"	14"	5/64"	530/540	30	100	18
.101"	.161"	3"	16"	5/64"	570/580	30	100	20.5
.113"	.187"	3-3/8"	18"	5/64"	580/590	30	100	21
.123"	.204"	3-1/2"	20"	5/64"	600/610	31	100	23

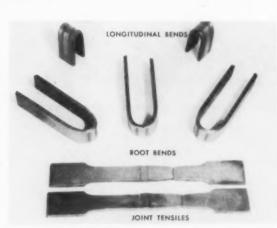


# Examine these A.O.Smith C

A. O. Smith C-OMANUAL and C-OMATIC processes produce x-ray quality, low-hydrogen welds with mechanical properties equal to the best produced with coated electrodes.

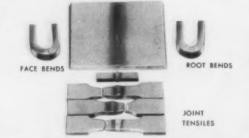
### Single Pass Butt Welds

— in A-285 steel. Face and root bends indicate superior ductility. Cross section of the butt weld shows extent of penetration. Radiographs easily passed Class 1 Boiler Code standards.



### **Double Pass Butt Welds**

— in 5/8" medium carbon steel. Face and root bends indicate excellent ductility. Sufficient strength also, as joint tensiles failed in the stock at about 85,000 psi.



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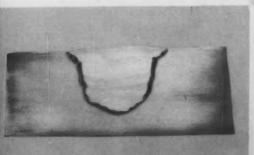
### HIGH-SPEED CASTING SALVAGE

Foundries are building up blowholes and other imperfections in castings at high speed and low cost with A. O. Smith C-OMANUAL welding. Operators put down metal at rates up to 30 lbs. an hour, compared with 10 pounds or less with manual welding. Deep penetration and weld quality are assured. No flux or slag to chip. Operator can start at the bottom and work to the top without stopping.



### FILLED BLOWHOLE IN CASTING (Cross Section)

Built-up blowhole in a salvaged foundry casting is 4½" deep and 6" in diameter. On jobs like this, A. O. Smith C-OMANUAL puts down weld metal much faster than conventional electrodes.

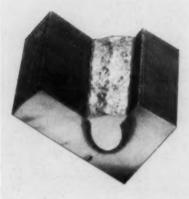


# CO2 physicals, too

### TYPICAL MECHANICAL PROPERTY TESTS

As-Welded, Not Artificially Aged

A. O. Smith Wire	Type Weld	Yield Strength	Tensile Strength	% Elong.	Red. of Area
CO-86	Butt	58,000 60,500	73,000 72,000	30.0 28.5	62.3 61.8
CO-85	Butt	54,800 54,300	72,400 71,900	30.5 30.5	64.5 64.9



### **▼ POSITIONED FILLET**

Single layer fillet weld deposited in 3/4"-thick ASTM A-285 steel. Note depth of penetration and smooth surface appearance of the weld, A. O. Smith 1/16" CO-85 wire was used at 470 amps, 40 volts.



### BEND TEST RESULTS

Welds made with the CO2 processes were entirely satisfactory after bending to 180°. Tests proved that weld metal of excellent ductility are obtained.

### PENETRATION

Welds made with A. O. Smith C-OMATIC and C-OMANUAL have a wide and well-rounded weld penetration, as this photograph clearly shows.



### HIGH PRODUCTION SET-UP

C-OMANUAL in use on X member crossbar of an automotive convertible frame. This is a high production set-up where the operator is, in effect. making an I-beam section — welding two siderails on a center web. Work is positioned for downhill (20°) welding. Speeds between 100 and 200 ipm are achieved. Work requires NO degreasing or cleaning. Slag cleaning eliminated. Virtually no rejects.



### A. O. SMITH AUTOMATIC WELDING WIRE

Designed specifically for top performance CO2 welding on a wide variety of steels. Available in many diameters, packages and types.



# ...Button welding with a hand gun!

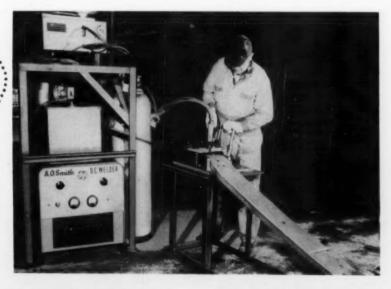
- · A finished weld that resembles a button or rivet head.
  - Made with a lightweight hand gun using the CO<sub>2</sub>
     C-OMANUAL process.
    - No special training or skill required of the operator.

Button welding can best be described as an economical and improved substitute for spot (resistance) welding and riveting with applications far beyond those two processes.

Employing the basic C-OMAN-UAL equipment (see pages 4 and 5) plus a Button Welder Adapter Kit consisting of a choice of nozzles and a cycle timer, the operator merely positions his gun on the work, pulls the trigger and holds until the welding stops — automatically. Cycles can be varied from three (½0th second) to 360 (6 seconds) depending on stock thickness (¾4" to ¾6").

Wire feed rolls are designed to feed weld wire without wire disAny of the standard joints can be button welded (lap, fillet, butt, etc.) without a need for special operator training or skills. And every "button" is exactly the same — as pre-set on the timer. There's no flux to clean — no need for a welding helmet. Operators love it.

The button weld process gives high quality weld metal, high deposition rates, deep penetration, low hydrogen weld metal, visible arc, no slag removal, and low overall costs.



### No Possibility of Operator Error

Button-welding a reinforcement bracket with the A. O. Smith CO<sub>2</sub> process. In this case five button welds are grouped in a relatively small area, with a simple aperture fixture used for positioning. Steel gages are 0.109 for the top piece and 0.145 for the lower piece. Each weld requires approximately one-half second (30 cycles), which is pre-set on the automatic timer. Any possibility of operator error is eliminated. Amperage: 420 at 39 volts. Visible weld, and no cleaning or degreasing of work necessary. The operator requires no helmet.



# Be right on the "button" the



### Slip-on Nozzles For Different Joints

Nozzles for burn-through button welds and fillet tack welds along with the cycle timer, are furnished with each "Button Gun" kit.

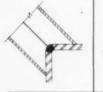
 Standard burnthrough button weld nozzle



2. Fillet Tack Button Weld Nozzle



Special nozzles for varied applications can easily be made to suit your job requirements.











# A.O.Smith way

Reliability of weld quality even on uncleaned steel, extreme flexibility, and low cost of operation make A. O. Smith's CO<sub>2</sub> button gun a valuable new high-speed production tool. Note that it is ideal for tacking. No skill on the part of the operator is required: the supervisor sets the cycle, the operator positions the nozzle, pulls the trigger, and gets a perfect button weld every time.

CO2 BUTTON WEL	LDS
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.

.081

.089

.119

.142

.195

.215

A

.081

.119

.142

.195

.215

380 37 23 360 37 25 390 37 30	Amps.	Volts	Cycles
360 37 25		27	22
	460	40	33

### CO2 EDGE BUTTON WELDS

Wire

16

16

1/16

460

465

Sto	ck	1	1	1	1
A	В	Wire	Amps.	Volts	Cycles
.081	.081	1/6"	280	40	23
.081	.081	3/102	200	37	42
.089	.089	1/16	290	40	23
.089	.089	364	200	37	35
.119	.119	1/16	370	37	35
.136	.136	1/16	350	37	40
.183	.183	16	380	37	42
	.081 .081 .089 .089 .119	.081 .081 .081 .081 .089 .089 .089 .089 .119 .119 .136 .136	A B Wire  .081 .081 ¼6" .081 .081 ¾ .089 .089 ¼6 .089 .089 ¾ .119 .119 ¼6 .136 .136 ¼6	A B Wire Amps.  .081 .081 ¼6" 280 .081 .081 ½½ 200 .089 .089 ½½ 290 .089 .089 3½ 200 .119 .119 ¾6 370 .136 .136 ¾6 350	A B Wire Amps. Volts  .081 .081 ¼6" 280 40  .081 .081 ½6" 200 37  .089 .089 ¼6 290 40  .089 .089 ¾4 200 37  .119 .119 ¼6 370 37  .136 .136 ⅓6 350 37

### **Button Welding Doubles Production**

Photo (at left) shows an operator button-welding a cover plate to a control arm. This job was formerly hand-arc welded at a rate of 2,200 pieces per shift. Using the button gun, the rate was upped to 4,800 pieces per shift. From 5% to 8% of the parts manually welded required repair. Only ½ of 1% of the button-welded parts required repair.

On this job two button welds are made on each piece (0.180 to 0.180 stock thickness) at ½ second each; 425 amps at 39 volts.

An interesting sidelight concerned a job requirement of ½e" maximum button height. Problem was solved by drilling a ¼" hole in the top piece and actually inserting the wire of the button gun in the hole. The result was a virtually flat button.

### YOU KNOW THIS MAN . . .

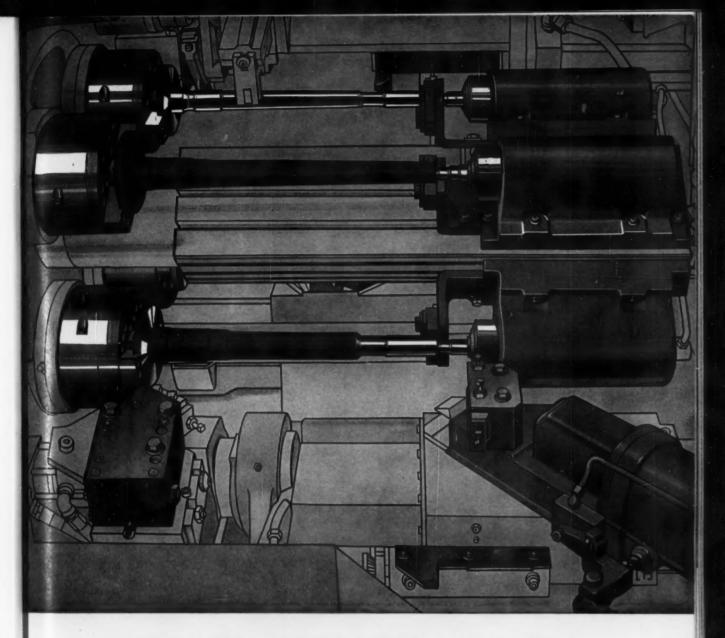
sure you do! You've seen him in the movies, on television, and perhaps on the stage. John Carradine—a star in all three mediums. During a visit to Milwaukee, he visited A. O. Smith, discovered the dramatic art of welding, and got right into the middle of it

got right into the middle of it.
IF YOU have a role in
which CO<sub>2</sub> welding can play
a great part, and you want
to see a try-out — call your
"man from A. O. Smith."



to

in



### idea for volume producers of shafts

Economists are making startling predictions on this year's increase in productivity. They say it will be twice that of recent years — up as high as 10% in some manufacturing industries.

Whether or not these predictions come to pass, it's certain that it won't happen in plants using outdated equipment.

Shaft work is a problem to many firms. New Britain pioneered templatecontrolled contour turning and boring, solving the problem for many progressive companies. Now for the manufacturer with really high volume requirements we present Model 412/25—a fourspindle, template-controlled machine capable of producing a four-fold increase in productivity per man hour.

The basic principle pretty much speaks for itself. As in the case of the single-spindle contour lathe, inexpensive metal templates control the full cycle and re-cycle if required. Simple, single-point tools replace complex gang tooling. Setup is simple and fast. When tools wear, merely replace them. Since all relationships are maintained by the template, tool replacement involves no problem.

When the volume of contour turning warrants it, this machine can be the best money maker on the production floor. Your New Britain representative can quickly tell you after looking at your prints and learning of your production requirements. Meanwhile, we would be glad to mail you descriptive literature containing the basic facts and specifications. New Britain-Gridley Machine Division, The New Britain Machine Company, New Britain, Connecticut.



NEW LOOK IN NUCLEAR SUBS . . . The Navy's new submarine Skipjack, built by General Dynamics Corporation's Electric Boat Division in Groton, Connecticut, features a revolutionary blimp-shaped hull and diving planes on the sail (formerly known as the conning tower). Although her speed is classified, Skipjack is the fastest of the A-Subs.

UNITED STATES PIPE & FOUNDRY CO.

Steel and Tubes Division (

UNLINGTON, NEW JERSEY



TALL OFFICER BURLINGTON SOUTON ENGINEERING THICASE CLEVE, AND LOS AUSTES HET YORK PETTSBURDS IN ASSESSED IT COURS

# "HYDROFORGED" FINE-GRAIN STAINLESS PIPE FOR THE NUCLEAR NAVY\*

**THE PROCESS:** The starting point is a high quality machined hollow billet made centrifugally which is cold expanded by hydrostatic pressures up to 50,000 PSI in specially designed massive metal dies. After "hydroforging", the pipe is given a recrystallizing anneal which results in the grain refinement characteristic of wrought stainless steel.

**THE PRODUCT:** After final machining of the O. D. and I. D. surfaces to 125 micro inch finish, the pipe is subjected to all the testing requirements of Military Specification MIL-T-18063A (Ships) which covers seamless austenitic steel tubes and pipe intended for radioactive system service. This specification includes: chemical analysis, tensile properties (for Type 304 stainless steel—75,000 PSI mini-

mum tensile strength, 30,000 PSI minimum yield strength, 35% minimum elongation), expanding and flattening tests, hydrostatic pressure test, intergranular corrosion test, macro-etch, ultrasonic and liquid penetrant examination.



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### \* U. S. NAVY SERVICE APPLICATIONS FOR HYDROFORGED STAINLESS INCLUDE:

Pipe for valve operating system reservoirs and primary water preheaters

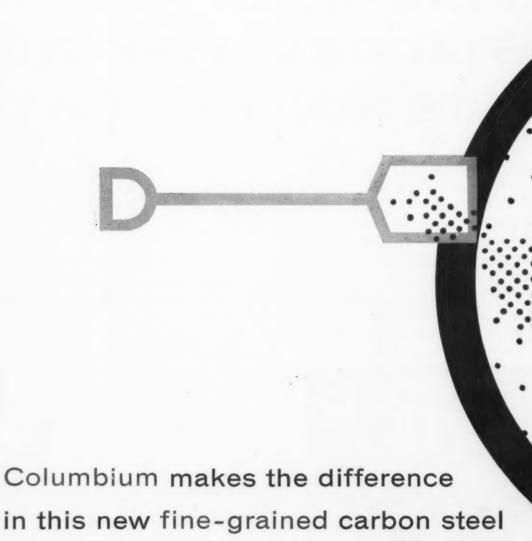
Primary coolant piping for nuclear submarines and surface ships

Seamless welding fitting stock for large diameter reactor piping systems for submarines and surface ships

Demineralizer shells

PIPE BEING ULTRASONICALLY
TESTED BY ACCORDANCE WITH MILITAR
SPECIFICATION MILITARES (Ships)

DIAMETER - 8" through 10" O C WALL - 8" to 4" TONGTH in No in 22" lost



The new GLX-W steel offers a unique combination of characteristics—the formability and weldability of mild carbon steel plus greater tensile strength and notch toughness.

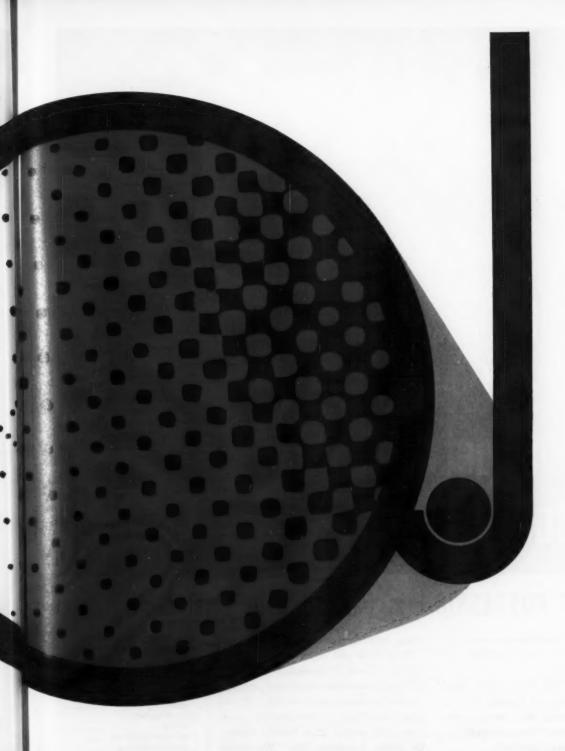
The addition of small amounts of columbium gives GLX-W the finer grain structure that makes this possible.

Where design permits, the use of GLX-W can result in weight savings up to 35%, compared with mild carbon steel. With yield strengths ranging from 45,000 to 60,000 psi, GLX-W steels are recommended for a broad range of applications. For technical information, write to our Product Development Division, Department A.

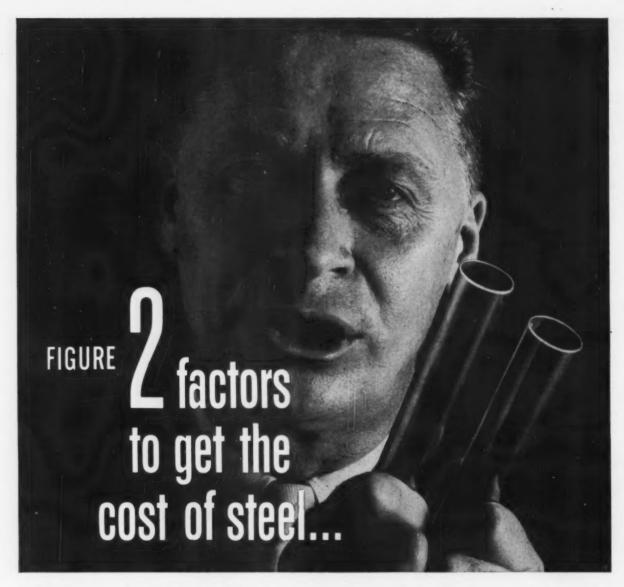
### **GREAT LAKES STEEL**

Detroit 29, Michigan

A DIVISION OF NATIONAL STEEL CORPORATION



THE IRON AGE, October 8, 1959



### COST OF POSSESSION is part of your final cost!

When you keep a miscellaneous inventory of steel, you inflate your costs and tie up capital uselessly.

You can avoid this. Many smart costminded steel users are buying all or a major part of their steel needs from Steel Service Centers. They get stock cutto-size and delivered promptly.

Couldn't this save you money too, by reducing the costs of storage, space, handling, cutting, waste and obsolescence?

Next time you order steel, compare price plus cost of possession with what Service Center steel would cost you. For more information, get the booklet, What's Your Real Cost of Possession for Steel? from your nearby Steel Service Center. Or write American Steel Warehouse Association, Inc., 540-D Terminal Tower, Cleveland 13, Ohio.

COST OF POSSESSION FOR STEEL IN YOUR INVENTORY

Per ton delivered Cost of capital:

Inventory Space Equipment

Cost of operation: Space

Materials handling Cutting & burning Scrap & wastage

Other costs: Obsolescence Insurance

Taxes
Accounting
TOTAL

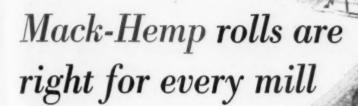
COST OF FREEDOM-FROM-RISK STEEL FROM YOUR STEEL SERVICE CENTER

Per ton, cut-to-size, and delivered
TOTAL

THE



The American Steel Warehouse
...YOUR STEEL SERVICE CENTER



### ..IN MERCHANT MILLS

for typical conditions: Mack-Hemp Technigrain and Technigrain Special alloy iron rolls give you exactly the degree of wear resistance you need for normal production run conditions in roughers, strands and leaders. Tailored to your specific requirements, these rolls have deep hardness penetration to assure minimum wear in the passes through many redressings.

For finishing: You'll find that Mack-Hemp Nironite C Special nickel alloy grain iron rolls have the hardness and fine grain structure to roll a top-quality finish on your merchant products in normal production runs.

For severe, heavy-draft conditions: If you have a tandem set-up that's been giving you a roll breakage problem, you can cure its tendency with Mack-Hemp Technikrome, Stironite or Supermetal high-carbon alloy steel rolls. All of these roll types can be used for roughers, intermediates and finishers. They are alloyed for increased strength and wear resistance, with Supermetal and Stironite rolls showing somewhat higher hardness.

Every Mack-Hemp roll that leaves our plants has been as carefully mated to your specific mill conditions as we know how to make it. It's your guarantee of getting more tonnage from the rolls with the striped red wabblers.

MACKINTOSH-HEMPHILL . DIVISION OF E. W. BLISS CO.

Pittsburgh and Midland, Pa.



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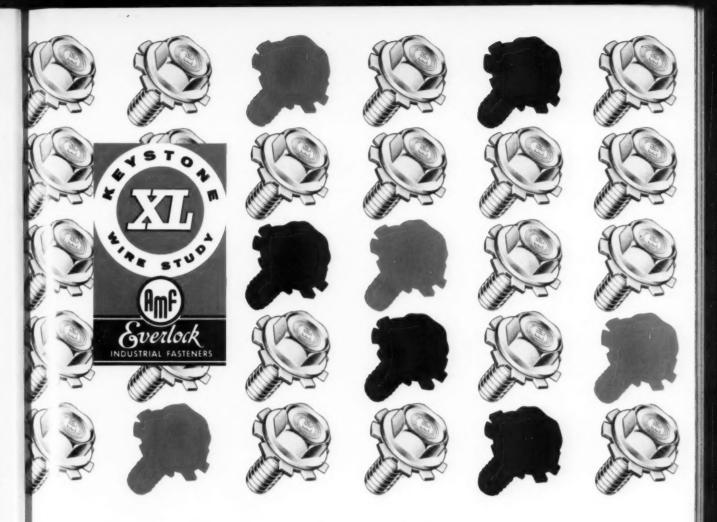
# The CECO-DROP and its place in forge shop modernization

### A Realistic Approach to Forge Shop Modernization

During the past few years, mounting competition has caused forge shop managers to seek ways to further increase production and reduce costs. A number have scrapped their old board hammers replacing them with Ceco-Drops, the modern piston-lift gravity-drop hammer. These shops have thus placed themselves in a position to get more business—and they are getting it! • A wealth of helpful information is available in Chambersburg's new 28 page forge shop modernization bulletin. Based on studies made in prominent forge shops, this publication assists you to formulate your own step-by-step modernization program. Write for a copy today.

CHAMBERSBURG ENGINEERING COMPANY

CHAMBERSBURG, PA.



# KEYSTONE XL flowability is the secret of volume production at Thompson-Bremer & Co.

DIVISION OF AMERICAN MACHINE & FOUNDRY CO.

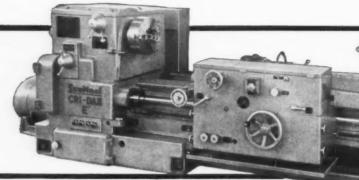
Users of Sems fasteners recognize this familiar symbol as the Everlock trademark of Thompson-Bremer & Co. division of American Machine & Foundry Co., Chicago, Illinois. Using Keystone XL Wire, head cracking is eliminated and die life increased 30%. They manufacture many fasteners in two blows including this 5 diameter Sems, or this Phillips hex screw with a 4½ diameter head and extruded pilot point. Keystone and Thompson-Bremer worked together to develop just the right wire to produce a better quality product at a competitive cost. Confidential counseling and metallurgical assistance is yours for the asking, too! Call us.



# CRI-DAN

(Semi-Automatic Single Point)

### THREADING LATHES...



faster than thread grinding or milling...handles toughest jobs on hardest materials at less cost-distributed by

### **GISHOLT**

Widely used throughout Europe and rapidly gaining favor in the U.S.A., CRI-DAN High-Speed Threading Lathes offer outstanding advantages on a wide variety of threading work. Using single-point carbide tools and positive, cam-controlled movements, CRI-DAN provides very accurate lead and thread form on all types of internal and external threads, including multiple-start, coarse, fine, left- or right-hand, parallel or taper, with metric or inch pitches. Highest production, accuracy and fine finish are assured on even the most difficult materials.

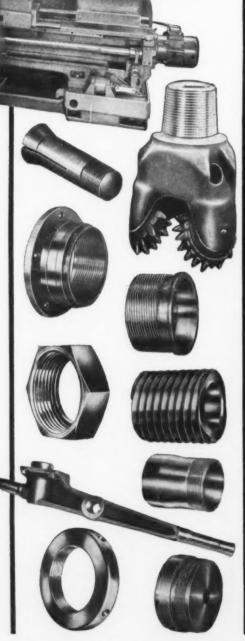
With simple operation and 15 minute change-over, CRI-DAN is an extremely versatile machine capable of handling an amazing range of components at high production rates. Single-point carbide tools, easily resharpened or replaced, cut tooling costs to a minimum.

Two models are available with a full complement of accessories to meet your needs. Ask your Gisholt Representative for full details or write



Investigate Gisholt's Extended Payment and Leasing Plans

Turret Lathes • Automatic Lathes • Balancers • Superfinishers
Threading Lathes



in A

Here's the inside story of industry's

# MOST RUGGED HIGH VOLTAGE SWITCH

THIS SOLENOID AIR BREAK CONTACTOR IS THE HEART OF THE A-B STARTER LINE

A tremendous operating life
has been built into these
new A-B high voltage, air breal
tarters by using the same simple
solenoid design—with only one
moving part—that has proved good
for millions of trouble free operations
in Allen-Bradley low voltage starters.
A-B high voltage starters are made
for all types of service and for all
types of motors up to 1500 hp, 2300 v;
2500 hp, 4600 v. Send for
Publication 6080, today.



**Faster Arc Suppression** 

New blowout design. Novel arc chutes are molded from an arc resistant material.



**Double Break Contacts** 

Silver alloy contacts never need maintenance. Vertical motion assures uniform contact pressures.



Only One Moving Part

Simple solenoid design eliminates trouble-causing pins, pivots, and flexible jumpers.





A-B High Voltage Starter with Air Break Contactor

Bulletin 1159 high voltage air break, acrossthe-line induction motor starter in NEMA Type I enclosure. All Allen-Bradley high voltage starters are equipped with current limiting fuses with interrupting capacities of 150,000 kva at 2300 v; 250,000 kva at 4600 v. ALLEN-BRADLEY

Member of NEMA

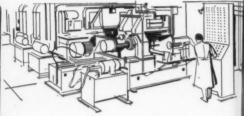
Quality Motor Control

Allen-Bradley Co., 1316 S. Second St., Milwaukee 4, Wis. In Canada: Allen-Bradley Canada Ltd., Galt, Ont.

# **AUTOMATION BEGINS HERE**

... Insist on Allen-Bradley accessories for continuous automatic production





In this broad line of Allen-Bradley accessories, each and every unit carries the traditional A-B trademark of quality that stands for trouble free operation. Rugged construction, and maintenance free, silver alloy contacts provide the reliability that is essential to the continuous operation of your automatic production machines.

Profit from the experience of the leading machine tool builders . . . insist on Allen-Bradley quality motor control all the way!

Special push button panels can be assembled to your specifications.



OILTIGHT LIMIT SWITCHES
Bulletin 802T with sealed heads
and bodies. Various operators.



PRECISION LIMIT SWITCH
Bulletin 802 oiltight. Responds
to very small operator travel.



OILTIGHT CONTROL UNITS
Bulletin 800T. Choice of push
buttons, lights, and switches.



OILTIGHT CONTROL STATIONS
Bulletin 800T for up to 16 units in die cast aluminum enclosure.



PNEUMATIC TIMERS
Bulletin 849. Reliable and accurate. For on-delay or off-delay.



OILTIGHT PRESSURE CONTROL Bulletin 836. For hydraulic systems with pressures to 5000 psi.



STANDARD DUTY PUSH BUTTONS Bulletin 800. Up to three units, also pilot lights and switches.



FOOT SWITCH
Bulletin 805. In rugged die cast
housing for toughest service.

8-59-RM

**ALLEN-BRADLEY** 

Member of NEM

Allen-Bradley Co., 1316 S. Second St., Milwaukee 4, Wis, In Canada: Allen-Bradley Canada Ltd., Galt. Ont. QUALITY MOTOR CONTROL



# INDUCTOMELTING\* MEANS FEWER CASTING REJECTS



The application of INDUCTOMELTING in ferrous and non-ferrous foundries assures fewer faulty castings. Several related factors contribute to this reduction of rejects . . . such as Inducto's high melting speeds, precise temperature control, electromagnetic stirring action and virtual freedom from gases and slag particles.

Consider the effect of these characteristics on your castings. The melting speeds are so high that oxidation and metal losses are insignificant. Correct pouring temperatures are always achieved—easily—and heat after heat can be exactly duplicated. You maintain close control over melt history. Critical alloys are not lost due to prolonged or excessive heating. Accurate control of alloy chemistry is assured since losses are negligible, even in the more easily oxidized metals. All melts are homogeneous because of the electromagnetic stirring action induced by the furnace. Carbon is not a problem and gas content can be held to a bare minimum.

These factors clearly explain why INDUCTOMELTING contributes to a sharp reduction in casting rejects. Add these savings to low metal losses, efficient operation and faster production and you can readily see how modern Inducto melting equipment has saved more than its cost in many installations over a short period of time.

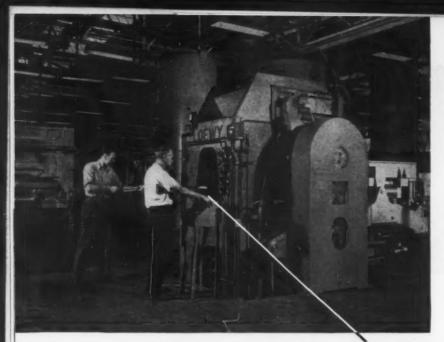
Write for complete details as outlined in Bulletin 70. Inductotherm Corporation, 412 Illinois Ave., Delanco , N. J.

\*INDUCTOMELTING is high-frequency induction melting PLUS the additional advantages of INDUCTO design features and engineering techniques.



INDUCTOTHERM

.. the mark of modern melting



### (Opposite)

Rectangular blade blank, withdrawn from electric furnace, is being inserted into automatic blade gripping and handling device.

### (Below, Left)

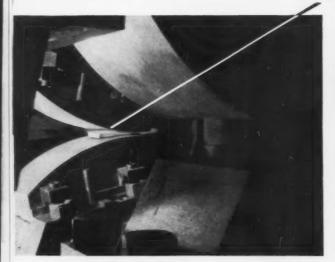
Blade blank is pulled through and shaped by oscillating sector roll dies. Two dies, with their lips rolling on each other through arc of oscillating length, impress upon the blank the air foil shape required.

### (Below, Right)

At end of rolling process, oscillating rolls open up and rotate back to starting position. Simultaneously the blade handling device returns the shaped blade and releases it pneumatically from grip head. Note spur gear synchronization of oscillating rolls, pressure selector switch, and 2-hand control pulpit.

Blade can be re-rolled for further reduction until final shape and tolerances are obtained, either after re-heat cycle or cold.

WORKPIECE (blade blank)





# LOEWY ROLL-DIE forges air foil shapes with up to 40% reduction in one pass!

A 4-stand oscillating roll-die forging installation which shapes high-strength, high-temperature alloys by hot and/or cold reduction is in successful pilot operation at the Tapco plant of Thompson Ramo Wooldridge Inc., Cleveland, Ohio.

Thanks to this new Loewy machine, jet engine compressor and turbine blades up to 7 in. wide and 27 in. long can now be mass produced by plastic forming to close tolerances and with insignificant loss of critical material.

Unlike other machines, which use mechanical drives in

rolling, it operates hydraulically. It is designed for both hot and cold forming under adjustable and pre-selected forming pressure up to 1200 tons. Forming pressure is applied lineally across the shape of the workpiece with great advantage over conventional die forging methods.

Do you manufacture intricate parts for application in the aircraft, missile or nuclear fields? If so, it is likely that we can help solve any production problems you may have. Write Dept. A-10.

### Loewy-Hydropress Division

BALDWIN · LIMA · HAMILTON

111 FIFTH AVENUE, NEW YORK 3, N.Y. Rolling mills • Hydraulic machinery • Industrial engineering



# Rollpin replaces 12 different fasteners



REPLACING A GROOVED PIN . . . in this application, Rollpin serves as a step pin in a ratchet wrench adaptor. With its light weight and high shear strength, Rollpin functions perfectly . . . cuts assembly costs



REPLACING A HEADED PIN ... in this hinge pin application, Rollpin is simply and inexpensively driven in place, greatly reducing assembly costs. Constant spring tension holds Rollpin firmly in place . . . eliminates loosening of hinge due to wear.



REPLACING A KEY . . . Rollpin demonstrates its ability to do away with precision tolerances, in this heating system damper arm. Faster, cheaper and more satisfactory than previous assemblies.



REPLACING A HUB ON A GEAR . . . Rollpin, self-retained in shaft, is simply snapped into molded slot to position sintered gear. This application, by an office equipment manufacturer, effects major savings in assembly. Rollpin's high shear strength is particularly valuable here.



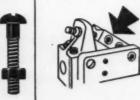
REPLACING A RIVET SHAFT . . . Rollpin serves as an axle for the sparkwheel of a cigarette lighter. No riveting or threading necessary . . . faster assembly. Note flush, clean fit.



REPLACING A DOWEL PIN . . . Rollpin is used here to prevent rotation of a thrust bearing. No reaming, no special locking. Easily removed. Lowest possible dowel pin cost.



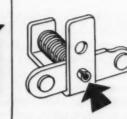
REPLACING A COTTER PIN . . . Rollpin assembly time is shorter, service life ten times longer. Vibration-proof flush fit. Easily removable.



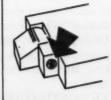
REPLACING A BOLT AND NUT...
Rollpins act as fasteners and pivots for the linkages in this electric welder. Rollpins may be used with a free fit in outer or inner members depending upon product design requirements.



REPLACING A SET SCREW . . . to fasten automobile brake handle a short length Rollpin is self-retained in the hand grip but can easily be driven into over-drilled hole in shaft for simple handle removal.



REPLACING A RIVET ... Rollpin serves as guide shaft for spring-loaded electrical interlock contacts. This electrical equipment manufacturer reports that rivet failure previously occurred at the clinched end under normal operating impact and vibration.



REPLACING A CLEVIS PIN... here Rollpin holds firmly in clevis, permits free action of moving member. Rollpin application shown is the plate of a home workshop tool.



WHERE CAN YOU USE

Rollpin is the slotted tubular steel pin with chamfered ends that is cutting production and maintenance costs in every class of industry.

of industry.

Drives easily into standard heles, compressing as driven.

Spring action locks it in place—regardless of impact loading, stress reversals or severe vibration. Rollpin is readily removable and can be re-used in the same hole. Made in carbon steel, stainless steel and beryflium copper. Write for samples and information, ELASTIC STOP NUT CORPORATION OF AMERICA, 2330 Vauxhall Road, Dept. «47-1077, Union, New Jerse,.

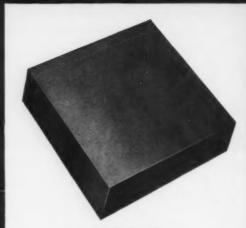


REPLACING TAPER PINS . . . in the assembly of precision differentials eliminated cost of taper pin reamers and the entire reaming operation. Rollpin costs less than a taper pin and installation is cheaper. They remove easily.

TRADEMARK

### WHY BUY METAL YOU DON'T USE?

# Switch to Allegheny Ludlum Cast-to-Shape Tools



FORGING

1250 lb. block, with 150 hours of machine time costing \$1000, is necessary to fabricate die retainer.



CAST-TO-SHAPE

Cast-to-shape die retainer to hold automobile horn die weighs only 650 lbs., a \$250 savings.

\$1250 saved by changing to Cast-to-Shape tool steel

Paying for metal that ends up chips on the floor is a costly proposition these cost-conscious days. Here are two good reasons why you should switch your toolmaking to Allegheny Ludlum cast-to-shape tools.

### CAST-TO-SHAPE MEANS

### YOU BUY FEWER POUNDS OF METAL.

For example the manufacturer of automobile horns above saved 600 pounds of expensive alloy steel by specifying a cast-to-shape die retainer instead of fabricating it from a forged block. Result? A savings of \$250, including the slight pattern cost.

### CAST-TO-SHAPE MEANS

### LESS FINISH MACHINING.

To machine a retainer from the block above would have taken 150 hours of machine time at a cost of more than \$1000. The Cast-to-Shape retainer is within 1/4 to 3/4 inch of *finished* size, requiring only a *slight* roughing and finishing operation.

Allegheny Ludlum, a tool steel producer who makes cast-to-shape tools, casts them with the same precise quality control for which their tool steels is known. A full line of cast-to-shape tool steel grades is available. You'll find ones with high resistance to abrasion, compressive strengths of approximately 400,000 psi, easy machinability, hardening with almost no distortion, toughness, high red hardness, and the capacity to take a high polish.

Find out now how you can cut costs on your complex tools. Write for FC-4, a 28-page technical discussion of A-L's Forging and Casting Division with applications, pattern information, design tips, analyses, and heat treating instructions. Or call your nearest A-L tool steel warehouse or distributor.

ALLEGHENY LUDLUM STEEL CORPORATION, OLIVER BUILDING, PITTSBURGH 22, PENNA. Write to Dept. A-22.

W\$W 7272

### **ALLEGHENY LUDLUM**

Tool Steel warehouse stocks throughout the country... Check the yellow pages EVERY GRADE OF TOOL STEEL... EVERY HELP IN USING IT





Two of Three Continuous Galvanizing Lines at Inland Steel Company, Indiana Harbor.

### Continuous Processing Lines

CONTINUOUS

ELECTROLYTIC TINNING

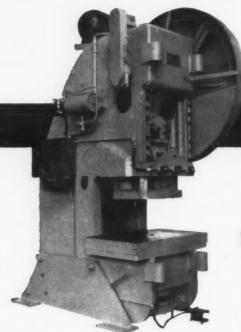
CONTINUOUS ANNEALING & NORMALIZING Our experience with Processing Lines dates back to the earliest production of strip in coils. This experience includes the design and building of many Continuous Electrolytic Tinning and Continuous Annealing and Normalizing Lines. In the field of continuous galvanizing, we have built more lines than all manufacturers combined.

In these days of higher and higher speeds, combined with larger coil diameters and weights, equipment must be rugged to stand up to 21-turn operation without long maintenance shutdowns. A trademark of Aetna-Standard is . . . good engineering and ruggedness of equipment.



### **BLAW-KNOX COMPANY**

Aetna-Standard Division Frick Bldg., Pittsburgh, Pa.



200-ton standard

# Warco

150-ton with power slide adjustment

# the OBI line with the built-in extras...

Warco—Quality Press Line—gives you all these "extras" in an OBI press: welded steel frame of plate much stiffer than cast iron or Meehanite; pneumatically operated combined friction clutch and spring-loaded brake; saddle type connection; long, hand scraped gib ways; heat treated crankshaft; high grade steel gears with heat treated pinions; and rotary type limit switches for press control.

Before you buy any OBI, compare and you'll buy Warco. They're available in capacities from 40 to 200 ton.

60-ton standard OBI inclined position

The Federal Machine and Welder Company Warren • Ohio





No

mud

the



# that has the <u>GUTS</u> to give you a free year's service certificate!

No other impact wrench on the market gives you so much durability even in tough service. The story's on the inside of a B&D Heavy-Duty Impact Wrench:

- Specially selected Drive Spindle Bearing—to eliminate bearing breakdown.
- "Life-tested" Impact Mechanism Spring repeatedly compressed over 100 million times.
- Anvil and Impactor precision machined from specially treated alloy steel to stand repeated crushing blows.
- Minimum friction cam mechanism gives extra power without extra weight.
- Famous B&D motor specially designed for Impact Wrench power.

LEADING DISTRIBUTORS EVERYWHERE SELL

Black & Decker

QUALITY ELECTRIC TOOLS



• Fully reversible with easy to use reversing ring.

Wherever a bolt, nut, wood or lag screw must be spun, or drilling or tapping done—in machinery moving, installation work, general maintenance or production, a B&D Impact Wrench will do the job faster, with less fatigue, and at lower cost. And ONLY Black & Decker backs performance with a free year's service certificate!

THE BLACK & DECKER MFG. Co., Dept. 0910 Towson 4, Maryland (In Canada: Brockville, Ont.)

Let me know more about B&D Impact Wrenches—FREE service certificate.

Name.....Title.....

Company.....

City Zone State



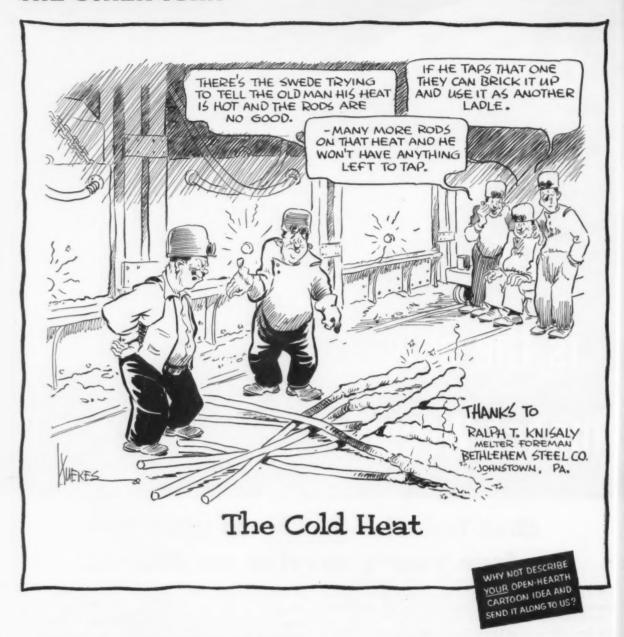
Address







### THE OTHER TURN



The benefits steelmakers obtain from our refractories are in part a result of Basic's on-the-job servicing. One of the rewards of this close relationship has been the opportunity to observe and appreciate the lighter side of these usually serious craftsmen.

Magnefer and Syndolag Set Fast - Stay Fast

BASIC IL CORPORATED

ORPORATED 845 HANNA BUILDING . CLEVELAND 18. OHIO

- STEEL MILLS ARE SHOOTING FOR 90 PCT operations two weeks after the strike's end. But even if that hopeful goal is reached, that is only half of the story to the user. It will take seven to nine weeks for cold-rolled sheet shipments to reach pre-strike levels.
- THE USSR'S IDEA OF TRADING ITS WAY out of the cold war is not going over with U. S. businessmen or diplomats. Few are really slamming the door on the possibility of increased trade with the USSR and its satellites. But the general opinion is that the Reds would readily return to economic warfare techniques whenever it served their purpose.
- SPENDING FOR CONSUMER DURABLES may be dampened in 1960 by tighter money, less Federal support for housing, and fewer new family formations. But producers of consumer durables expect help from increased personal income, the search for status and higher standards of living, replacement and new product lines.
- AUTOMAKERS ARE READYING A SECOND GENERATION of small cars. Ford's Comet, which will be sold by Mercury dealers, will be out next spring. They will be larger than the first compact cars.

  They'll be more powerful, more luxurious and--more expensive.
- RIDING ON THE SPACE RACE AND MORE COMPLEX capital goods, instrument makers are headed for a real boom. Instrument sales will hit \$3.25 billion this year, climb to \$3.6 billion in 1960.

  Individual manufacturers expect to double their 1958 sales this year.
- CAN SMALL BUSINESS RECOVER some of its dwindling defense business?

  Small business' share of fiscal 1959 prime defense contracts dropped to 16.6 pct of total awards from 17.1 pct in 1958, although total dollar volume increased. The Defense Dept. blames the drop on emphasis on missile and aircraft spending. Others contend it is the result of greater emphasis on the single weapon system contract, where small firms have less opportunity to participate.
- MACHINE TOOL ORDERS IN AUGUST DROPPED from July levels, for the second consecutive monthly decline. Seasonal effects plus the impact of the steel strike combributed to the decline. Total net orders for cutting and forming tools reached \$52.4 million in August, compared with \$63.4 million in July.

THE IRON AGE, October 8, 1959

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1959

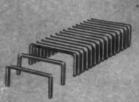
65



WIRE FOR PAPER CLIPS



COIL BINDING WIRE



PREFORMED STAPLE WIRE



WIRE FOR MILK BOTTLE CARRIERS



STANDARD AND SPECIAL WIRE SHAPES

### Whatever your problem is in



Thousands of wire applications in over a half century-involving virtually every kind of a wire problem-that's the experience and background we offer you in solving your special wire problems. We can supply wire from almost the size of a human hair, through 9/16" diameter for metal fasteners . . . round wire or wire in special shapes, practically any size, temper, finish and analysis in low carbon and medium low carbon steels. We may have a valuable case history that parallels your own special problem. Fill out and return the coupon for full details of Continental's Wire Service. We are eager to work with you.



PIANO COVERING WIR



FLORIST WIRE



WIRE FOR TOY WHEELS



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# New Communications Systems Widen Business Horizons

Distance is no longer a factor in transmitting and processing business data.

Business is spending billions on systems to improve communications.—By G. J. McManus.

 Industry's push to move facts faster is downgrading distance as a controlling factor in company deployment.

In the new scheme, a few feet of human travel may be longer than a thousand miles of fast transmission. At Westinghouse Electric Corp., a teletype message from Dallas to Forth Worth leaves Texas, travels to Pittsburgh, then goes back to the Southwest and the receiving station.

Hands Off—Before the present teletype network came in, Westinghouse would have relayed the same message through a regional switching center. The trip would have been miles shorter. But the old route required several feet of manual travel—and that cost precious seconds.

To eliminate the slow travel, Westinghouse last year concentrated its switching for 158 cities at a fully automatic center in Pittsburgh. The move reduced communications time from 30 minutes to around 3 minutes for the average message. Perhaps even more interesting, it created a condition where Dallas might have been in Maine or Texas without affecting message time.

New Dimensions—This last point logically raised the question: Why not move any function on the network to the point that offers great-

est efficiency, regardless of distance? The answer in many cases is there is no reason for retaining organizational setups that were based on the old notions of time and distance.

How It's Done—In line with this thinking, Westinghouse is now centering payroll operations of its lamp division plants at Bloomfield, N. J., headquarters. Payroll information will be teletyped to Bloomfield and poured into a computer. Pay checks for hourly workers will go out to the plants by teletype.

Underlying this regrouping and similar moves throughout industry are two basic facts:

1. A growing percentage of business information is moving by some system of electrical transmission.

2. Transmission is almost instantaneous, whether you're in the next room or the next country.

Tied to Data Processing—New systems of data processing are closely tied to communications.

U. S. Steel's H. F. van Gorder makes the point that no communi-



SHRINKING THE MAP: Communications center at Crucible Steel Co. of America process all orders and general communications. It takes only seconds for far-flung districts to reach the home office.

cation can be isolated from the system it serves. Director of methods planning at USS and an early advocate of Integrated Data Processing, Mr. van Gorder offers these thoughts:

"Each communications situation must be studied individually. Practical and logical systems design should precede the selection of a method to transmit information."

Mr. van Gorder feels much unnecessary communication would be eliminated "if administrative systems were based on the principle of management by exception." (When only information requiring action reaches executive level.) He

**Pct of Sample** 

1.4

3.5

4.9

86.3

says the answer in some cases may be to move the location of decisionmaking.

Higher Speed—In practice, the spread of systems design seems to be bringing more high speed transmission rather than less. In 1954, Aluminum Co. of America simplified and speeded up its order processing system, eliminating 40 pct of the typing and putting all orders on a 20,000-mile teletype network fanning out from Pittsburgh.

On an average day, 1000 new orders and 700 order changes will come into the communications center on the third floor of the Alcoa building in Pittsburgh. Each order goes by teletype to the production planning department on the 18th floor of the same building.

The last leg of the trip—from the third to the eighteenth floor—could be made by elevators. But elevator travel would break the pattern of a system that is geared to teletype and punched tape at all points.

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Uniform Flow — Laymen have difficulty understanding the need for uniform flow. But wire service preserves the integrity of systems that must use teletype for distant points in the same networks.

While costs or other factors may override the advantages of uniformity, methods men say the trend is to standardize actions throughout a system. Uniform methods are almost a must of large data masses and electronic processing are involved.

Constant Upgrading — From a communications standpoint, the importance of this principle is that new devices make it desirable to upgrade information flow at some point in almost any system. And every advance tends to unbalance a system if there is no general speedup

That there has been a speedup is partly shown by the zooming cost of communications. Business and private users will pay telephone companies over \$8 billion this year for telephone, teletype and telegraph service. This is 175 pct more than

### Who Uses Teletype Messages?

### Sample of 1000 Messages

Classification of Content

**Customer Order Entry** 

**Customer Relations and Service Advice on Shipping Dates** 16.1 Requests for Shipping Dates 11.0 Quotations 8.9 **Product Information** 8.3 5.2 **Order Specifications Drawings and Books** 4.9 Pricing 4.8 **Expediting Orders** 4.3 4.1 **Negotiations** Shipping Data and Inquiries 3.8 Changes in Orders 3.7 Shipping Instructions 3.4 **Tracing Orders** 1.5 **Returned Material** 1.4

### Sales

Others

Advertising o	and Promotion	2.7
Sales Tips		1.4
<b>Total Sales</b>		4.1

**Total Customer Relations and Service** 

### Treasury

Miscellaneous

Credit	1.2
Cash Information	.8
Collections	.4
Total Treasury	2.4

### Purchasing 1.5

Accounting	0.8
Accounting	



## **An Expert Says:**

Each communications situation has to be studied individually. Practical and logical systems design should precede the selection of a method to transmit information. Much unnecessary communication could be eliminated if administrative systems were based on the exception principle.—H. F. van Gorder, director, Methods Planning Div., U. S. Steel Corp.

the same charge in 1949.

Spending for Equipment — For private line transmission alone, carriers in 1957 collected over \$100 million on telephone service and over \$75 million on teletype. Sales of communication equipment hit \$2.5 billion in 1958 and will jump to nearly \$3 billion this year.

All this activity has brought a search for ways to relieve the strain on lines and pocketbooks. The problem is particularly acute for data transmission, where computers stand ready to process big bundles of facts.

Alcoa System—Alcoa's teletype system provides a good example of how data is now transmitted in volume. When an order is received at an Alcoa sales office, information is punched on a tape by Flexowriters—electric typewriters made by Commercial Controls Corp.

The tape is then used to make office copies and to automatically teletype the message to Pittsburgh. Sending speed of 75 words a minute is about double the average manual rate.

The message goes through the relay center in Pittsburgh and to production planning in the same building. Information comes out in tape form. The new tape is used to run off copies of the order and

to re-transmit information to the producing plant.

Key elements in this system are the punched tape and the electric typewriter. They make it possible to reproduce orders at all points with no manual typing except when new information is added.

Super-speed—In commercial or near-commercial stages are devices that take teletype signals and convert them into tonal impulses for sending over telephone circuits. Using this principle, Bell's "Dataphone" service sends at speeds of 600 and 800 words a minute.

The difficulty is in finding a fast, economical means of converting super-speed transmission into convenient form.

**Question Raised** — Mr. van Gorder of U. S. Steel questions the whole motion of super-speed transmission.

"At the present pace of overall company operations," he says, "most communications can be handled by systems that exist today at the same speeds they are now operating."

Specialized equipment may prove the answer to some traffic jams. It is now possible for computers to talk to one another. New systems (IBM's Transceiver is one) send punch card codes from one processing center to another. Another approach to the problem of overloading is to use idle lines. After work hours, Alcoa sends teletype messages over its private phone lines. Westinghouse is studying a method of putting data over phone lines during intervals in conversations.

Microwave Coming—Others feel microwave may revolutionize the basic concept of long distance transmission. A few weeks ago, Federal Communications Commission ruled microwave systems might be operated by virtually any company.

Microwave is described as a form of radio transmission which uses ultra high frequencies for point-to-point communications. It can carry many channels of information . . . as many as 240 voice circuits . . . on a single radio beam.

As a result of the FCC ruling, says Arthur L. Reese, Motorola vice president, there "will be a re-evaluation of many companies' communications policies and practice with a large number ultimately conducting all inter-facility communications . . . voice, correspondence, records and even meetings . . . over their own microwave radio systems."

Reprints of this article are available as long as the supply lasts. Write Reader Service Dept., The IRON AGE, Chestnut & 56th Sts., Philadelphia 39, Pa.

## Peace Won't End Steel Shortage

 Resumption of steelmaking operations will still leave steel users with little to cheer about.

Last week, the Association of Iron & Steel Engineers held its annual meeting in Chicago. Engineers at the meeting hoped that mills will hit a pretty good pace within two weeks of a start-up. But prospects for speedy delivery to all but a few major users are not nearly so bright.

Blast Furnaces — Some major mills are shooting for 90-pct-of-capacity operating rates within 14 days after blast furnaces are relighted. But operators will not know the extent of damage to furnaces

until they are started up.

However, the first blast furnaces will begin pouring hot iron within four days of start-up. Most furnaces should be on and working within 10 days. It will take 14 days to get high quality iron.

Openhearths — Openhearths will need 24 hours to reach full temperature. The lack of blast furnace metal means they'll take another 12 hours before the first ingots are ready to be poured. Even so, they are expected to hit 85 to 90 pct of capacity by the end of two weeks.

Despite the length of the strike, damage to openhearths could be a lot worse. Openhearth roof failures were a problem after the 1952 strike. Only two basic roofs have failed during the present strike. And 160 of 900 U. S. openhearths, nearly 18 pct, have basic roofs.

Deliveries Will Lag—The rate of failures for silica roofs is higher. One source reports 30 failures in the Chicago and Pittsburgh areas. In 1952, Chicago alone had this many.

To some, it may sound encouraging that mills will be operating at pre-strike levels within two or three weeks of the day they start up. But it will take a lot longer than that before deliveries of pre-strike tonnage of steel are delivered.

Sheets and Bars — Cold-rolled sheets, one of the most critical items, will take seven to nine weeks to reach pre-strike tonnages. Prospects for hot-rolled sheets are better —only four to six weeks.

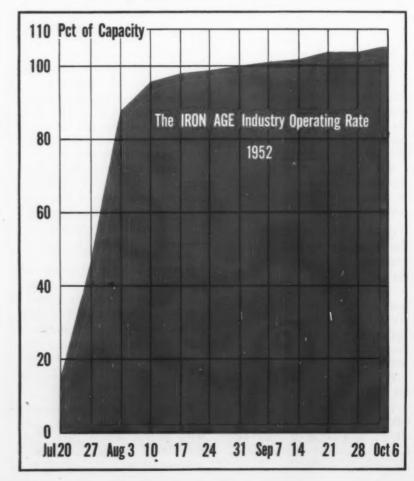
Hot-rolled bars will require at least 45 days. Some sizes will take over 60 days. Outlook for cold-drawn bars is even worse. Producers will operate at capacity less than six weeks after mill start-up. But customers will have to wait 75 to 90 days for tonnages and size ranges.

Galvanized and Strip — Enameling sheet customers will be in the same shape as cold-drawn bar users. Tonnage deliveries will take 8 to 12 weeks. It won't be any better for galvanized and sheet customers.

Other Possible Delays — Additional factors could make even these estimates seem optimistic. If T-H is used to get the mills back in operation, slowdowns and wildcat strikes can be expected.

Transportation men at the mills are worrying about possible shortages of rail cars and highway trucks which would further slow deliveries. And rush orders will undoubtedly cause congestion on loading docks.

## Can Mills Equal 1952 Comeback?





WHITE HOUSE SCENE: Just arriving for his turn with the President, David McDonald glances at Roger Blough, U. S. Steel chairman, who talks with newsmen

after his session inside. R. Conrad Cooper, chief negotiator for the steel companies, stands at Mr. Blough's shoulder. Talks then moved to Pittsburgh.

## Union Cool to Steel's Offer

Hopes for a settlement dim as union refuses to listen to contract language changes.

Unless there's a change, there is little hope for an early agreement.—By Tom Campbell.

C

• Steel labor and management are miles apart after more than five months of attempting to reach an agreement. Only a miracle would change this serious impasse.

No miracle is expected. As long as the union refuses to accept language the steel firms say will help them make the industry more efficient, there is no chance of a lasting peace.

Fight to Finish—After last minute proposals and counter proposals early this week, it was clear that this is no fight for peanuts. It is a fight by management to get its house in order for the long years of competition and inflationary pressures ahead. The union takes the stand that this is a fight to retain what it says it has won by hard bargaining in the past. Union officials say that Dave McDonald can not and will not take the kind of language on local practice (2 B) that the steel firms offered early this week. There was no chance that there would be any change in this union stand.

Placed a Price—The steel industry in its 15-cents-per-hour in two years offer has decided that it will not go beyond what it feels is the average productivity increase in steel—2 pct a year. But it has placed a price on this wage-fringe increase—new language that will enable better performance on the job, elimination of antiquated work practices and sharper discipline on wildcat strike offenders.

(For details, see p. 152.)

Hope Fades—Never in the history of collective bargaining has there been such a hopeless impasse. To think that there will be a settlement later this week would be stretching one's imagination to the breaking point. Most steel people are looking forward to the exact wording of the ballot which they feel employees will vote on after 60 days of Taft-Hartley.

Labor people, say the steelworkers, will never support the company's offer on any ballot. The steel industry privately is divided.

Holy War—The fight between steel labor and management frankly has become a holy war with all its emotion, dug-in positions and crusade-type thinking.

Thus, there can be no easy solution to this impasse. Once the men went out on strike and language change proposal was turned around by the union to its advantage, the die was cast.

The steel side can hardly back down more than it has: It can not raise the money ante any more, since it can not raise prices.

## U.S. Wary of Red Trade Moves

### Many Say Russia Is Still Waging Economic War

Eased East - West relations aren't easing worries of government and industrial leaders.

They're keeping an eye on the Soviet to make sure Communist goods aren't dumped here.—By N. R. Regeimbal.

 A strong fear of market-breaking Red dumping is lurking behind the new Soviet-U. S. era of reduced tension and at least token increases in trade.

In the recent past the Russians have managed to break world markets in aluminum and tin by carefully-timed c u t - p r i c e sales. Several thousand lbs of the Red aluminum are believed to have wound up here.

Soviet Pressure—More recently, the Russians have put extreme pressure on U. S. makers of scientific and technical equipment used in secondary school and college classrooms. They are delivering millions of dollars worth in New York at prices one-fifth to one-tenth the cost in this country.

Congress reacted by prohibiting schools from using Federal National Defense Education Act funds for purchase of Russian or Red Satellite goods unless similar equipment is not available elsewhere.

Leaders Worried — But many government officials and congressional leaders are still worried. Relatively low volumes of goods could cause serious injury to some of our strategic industries.

Because anti-dumping laws are based on costs in the foreign country, and costs are impossible to determine in the state-run Soviet economy, they are no help. Neither are tarrifs. The Reds showed in the case of the scientific equipment, that they are willing to set a price regardless of costs.

No Rapid Increase—U. S. officials have sharply shifted their previous opposition to trade with the Russians. They warn there are major obstacles to any quick or sharp increase in two-way trade between the U. S. and Communist countries. But they now appear eager to try to open all doors.

Credit and old lend-lease debts are the major stumbling blocks. Premier Krushchev during his recent visit, however, indicated the Russians are now willing to begin negotiating a settlement. When these negotiations were last broken off, the U. S. was demanding payment of only \$800 million on the original total of \$2.6 billion. The Reds offered only \$300 million.

Credit Prohibited—U. S. firms are now barred from granting credit to countries in default of earlier debts. State Department Undersecretary C. Douglas Dillon indicates this may be eased, too.

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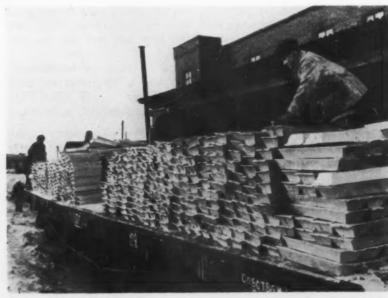
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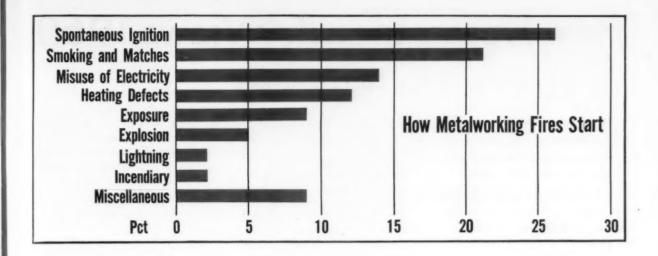
Mr. Krushchev did not ask for credit, but indicated he was irritated at the "discrimination" of the credit prohibition, along with present higher tariffs for the Red goods and some embargoes.

Low Volume—Russia's inability to make sizable amounts of goods which the U. S. would buy, and its shortage of trade dollars, will put a low ceiling on trade volume between East and West for years.

But an increase from the present level of only a few hundred million dollars a year to near the billion dollar mark is possible. Russia now is most interested in buying heavy capital equipment and machinery to produce consumer goods. The Reds indicate, however, that they will need credit in some cases. And American businessmen undoubtedly will risk copying if they agree to the sales.



RUSSIAN ALUMINUM: Workers stack up aluminum produced at the Stalinsk plant, built right after World War II. When this, and other Red plants, overproduce, the metal is usually dumped in Free World markets.



## Fire Losses Can Be Reduced

Major fires needlessly cost American industry millions of dollars each year.

They can't all be prevented, but both size and frequency can be minimized.—By G. G. Carr.

• American manufacturers last year sent \$175.3 million up in flames and smoke through 38,400 plant fires. Metalworking, about half of all industry, made a slightly better showing. Some 2900 fires cost \$23 million in damage.

However, 1958's fire losses were still lower than in 1957. "Large loss" fires (over \$250,000) for all industry last year cost \$52.3 million for 85 fires in the U. S. and Canada.

High Fire Losses—In 1957, there were 125 large loss industrial fires with nearly \$95 million worth of damage. Calculate the sales volume needed to provide money for lost and damaged plants and equipment, plus indirect fire losses, and the cost becomes astronomical.

According to the National Fire Protection Assn., construction shortcomings and lack of sprinkler and alarm systems are the main reasons for minor fires growing into major blazes. Can Be Prevented—Of 286 large loss building fires last year, 239 would have been prevented by automatic sprinkler systems. In 151 cases, discovery and fire department notification were delayed because there were no alarm systems or watchmen.

Built-in fire hazards included lack of division walls, and unenclosed stairwells and elevator shafts. These were major factors in allowing fires to spread.

Management at Fault — NFPA describes its analysis of 1958 large loss fires as a record of the "major fire protection failures of the year—the errors in judgment, the equipment that didn't work, the planning that was never done."

Management must take the major blame for this country's huge annual industrial fire loss, charges C. I. Babcock, manager of NFPA's fire record department.

Lip Service Only—Major industrial fires are basically caused, he stresses, by owners and managers who "have never given fire protection more than lip service or even completely ignore it—possibly under the illusion that an insurance policy solves their fire problems."

Others realized they'd better do something but lack proper guidance or understanding of the complexities of the problems, he adds. And a third group comprises those who have provided protection which on paper appears to be adequate in all respects but overlooks the possibility of human failure.

Many Metals Burn—New processes and materials bring new fire problems. H. R. Brown, senior engineer, U. S. Bureau of Mines, recently pointed out the hazards connected with the increasing use of combustible metals like titanium and zirconium.

Some metals ignite spontaneously. Some react violently with waters. Some are readily combustible only in a finely divided form. All of the combustible metals (and some not so considered) are capable of producing dust explosions, Mr. Brown notes.

Cooperation Needed — There is little reliable experience on control and extinguishing combustible metal fires. Mr. Brown recommends that management and local fire chiefs work together on the problem.

He urges metalworkers to learn the characteristics and fire hazards of radioactive metals.

## How Heavy Industry Views 1960

#### Strong Sales Expected as Boom Continues

There were a few worries about effects of tight money on business next year as AMA conferees forecast 1960 sales.

But a good year was predicted for capital goods, consumer durables, and metal production. —By P. J. Cathey.

• Heavy industry expects a strong sales year in 1960.

This view is shared by makers of capital goods, consumer durables, defense contractors, and metal producers who attended the American Management Assn.'s Sales Forecasting Conference in New York last week.

Money Troubles?—One big "if" is attached to the cheerful forecasts: How tight will money be next year?

"The fiscal situation is the weak link," declares Norris O. Johnson, vice president, the First National City Bank of New York. "Tight money threatens to constrain and constrict the economy as we cross the threshold into the sixties."

But, along with other speakers, Mr. Johnson is convinced 1960 will be a good year for heavy industry. Among reasons he lists the continued low ratio of inventories to sales. "There is room for some further activity in normal inventory building." E

More Capital Spending—Capital spending was also seen an important force in 1960.

"Rising profits in first half 1959 are supporting continued growth in plant and equipment spending," says Mr. Johnson. "Renewed activity after settlement of the steel strike should swell profits and give further impetus to capital spending."

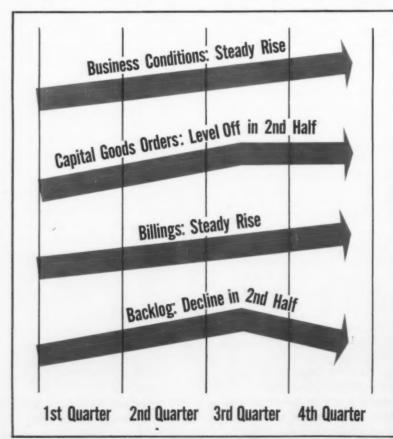
Capital goods makers share this enthusiasm. "All indicators predict higher spending for capital goods equipment," declares Alexander L. Bupp, manager and assistant to the president, Bucyrus-Erie Co., "Appropriations for capital goods equipment should reach a peak during the first half of 1960, orders should peak out during the second half... and shipments should continue to increase throughout the year." (See chart).

Some Doubts—However, as a group, capital equipment makers are concerned the boom may start to lose steam in the second half of '60. Some feel orders will level off or drop during the third quarter. There is even less cheer about the outlook for the first half of 1961.

"We should have generally good sailing in 1960 that will give us time to prepare for the storm in 1961," says Mr. Bupp. He predicts leading economic signs will turn down during the third quarter, related guides will stay up moderately through the last quarter, and lagging guides will continue strong throughout the year.

Pacesetter—Capital goods spending in 1960 may near an annual rate of \$30 billion, he predicts.

## Capital Goods Outlook for '60



Equipment rates are expected to advance more rapidly than the Gross National Product and capital spending in general.

Record for Steel?—Gains by raw material suppliers will reflect the spending surge of 1960. Steel production of 127 million ingot tons is predicted. This would be a 19 pct gain over the 107 million tons estimated for 1959.

These influences should spark the rise of steel output to a new high:

- (1) Inventory rebuilding after the longest steel strike since 1919.
- (2) Greater automobile production—possibly a 10 pct increase over 1959.
- (3) Near record spending for new plants and equipment—close to the all-time high of \$37.5 billion in 1957.
- (4) Defense purchases of about \$47 billion.
- (5) Greater steel use by makers of machinery, appliances, railroad cars, and containers. Oil and gas industry steel use will be heavier.

Nonferrous Gains — A record year is also forecast for the aluminum industry. Consumption could reach 2.3 million tons, a gain of about 7 pct over 1959 levels. Prime market demand should come from the building industry, aircraft and auto makers, appliance builders, and chemical processors.

Other nonferrous metals should make gains in 1960. A 2 pct increase is expected in copper with 1960 production of about 1.4 million tons. Lead use should advance around 7 pct for a total output of 1.125 million tons.

Chemical Outlook — Chemical product sales should reach \$27 billion next year with advances by the petro-chemical industry an important factor. Petro-chemicals should account for one-fourth of all chemical industry sales.

Principal markets for chemical makers will include the auto industry (glass, plastics, rubber, and paints), building and highway construction, products for rocket and missile programs, and agriculture.



**PUNCHING TAPE:** C. L. Young, drafting specialist, punches the tape which will control a 100-ton turret punch press, from dimensionless drawings using General Electric's new Auto-programmer.

# GE Device Saves Drafting Time

General Electric has taken the idea of punched tape controls on its 100-ton turret punch press one step further to make even greater savings.

The company's Specialty Control Dept., Waynesboro, Va., has come up with an Auto-programmer, to automatically produce the tape from dimensionless engineering drawings.

Notes Savings—The company is now able to use one draftsman where it used to use four. And there is almost no chance for human error. "As a result of the pre-production savings," says L. T. Rader, general manager of Specialty Controls, "we are now able to produce better components at lower cost."

A typical job for the Autoprogrammer begins with a rough layout. A draftsman accurately positions drafting templates on the outline drawing and secures the layout to the Auto-programmer.

How It Works—The draftsman manually selects the turret punch press positions required. He centers the locating device, using lighted crosshairs, over the centerline markings on the template.

A foot switch transfers dimensions from the layout to the Autoprogrammer. And a second switch punches the information on tape.

At the same time the work is marked on the layout by a felt pen to eliminate the chance of repeating the work accidently.

Diazo transparency is made of the layout, with parts numbered, for use as an assembly drawing in the factory.

## New Iron Plant Will Use Gas

■ A new 150,000 ton-per-year merchant iron plant is likely to be built near the head of Lake Superior.

Premium Iron Ores, Ltd. of Montreal, is negotiating for a unique \$10 million natural gas, direct reduction plant at Port Arthur, Ont., using the HyL process. Premium is controlled by the Cyrus Eaton interests, and is sales agent and largest stockholder of Steep Rock Iron Ores, Ltd., whose ore the proposed plant would use.

Good Price — The plant would buy natural gas piped into the area from Alberta, for about  $40\phi$ - $50\phi$  per 1000 cu ft. Cost in towns like Cleveland and Pittsburgh is  $60\phi$ -

80¢. Enormous quantities of gas is needed. So a favorable gas contract is essential, and is one of the last hurdles

A reserve of offgrade highsulphur, high-silicon ore from nearby Steep Rock (difficult to sell on the open market) could be used. More would be forthcoming as a new concentrating plant at Steep Rock goes into operation. Using off-grade ore would step up mine production since operators won't have to pick their way so closely through the deposits.

To Market—Output of the plant can be shipped in ore boats to the major U. S. markets through lower Lake ports, and to Canada as far west as Regina.

Iron would be briquetted sponge, similar to that turned out by Republic Steel's R-N process, and pig, says P. E. Cavanagh, vice president of Premium. It would be sold mostly to ductile iron foundries and electric furnace steel producers where extra purity is required.

First of an Era—Gaseous reduction plants like this could begin a new era in steelmaking. Traditionally mills locate near coal deposits or face a long haul. Plants like this, with low tonnage output, could be near ore sources and gas economically piped in.

In the HyL direct reduction process which the new plant will use, ore is loaded into a refractory-lined vessel similar in size and shape to a steel ladle. Hot gases are blown through to raise the temperature to about 2000°F. Reformed natural gas is then blown through.

#### Harbor Jam at Cleveland



TRAFFIC JAM: Last week 10 ships docked at the same time in the Cleveland harbor. It's a record. But it may not stand for long. With eight weeks to go in the season 421 ships have already called, com-

pared to 416 in all of last year. And another 100 are scheduled to hit this port soon. The Cleveland Stevedore Co. says it is getting 10 times as much traffic as it had expected, is rushing a \$450,000 expansion.

#### Still Using Scrap Despite Strike

Despite the strike, an estimated 551,000 tons of iron and steel scrap were consumed by foundries and non-struck mills during July, the Institute of Scrap Iron & Steel reports.

An additional unknown tonnage was consumed up to the strike deadline in July. However, figures are unavailable from the mills.

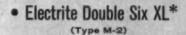
The Bureau of Mines estimates a total of 6.7 million tons of pig iron and scrap was consumed in the first part of July. Using a rule-of-thumb, an estimated 1.5 million tons was from steel scrap.

During July, continuing mills and foundries received 559,000 tons of scrap from all sources, the Institute says.

The Institute indicates it will not issue any further reports on the use of iron and steel scrap until a settlement is reached in the current steel strike.

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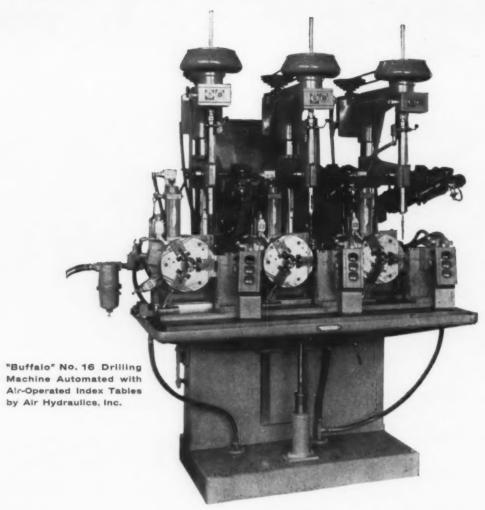
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Eight years ago a large mid-western manufacturer bought a "Buffalo" No. 16 Drilling Machine. It proved to be an excellent production machine. Quantity and quality of output were high. The No. 16 stood up to the punishment of continuous production with a minimum of maintenance.

This year the manufacturer decided to automate certain drilling and reaming operations. Because of eight years of complete satisfaction, a new 3 spindle "Buffalo" No. 16 Drilling Machine was specified.

The mechanism for automating the "Buffalo" Drill was designed and built by Air-Hydraulics, Inc. of Jackson, Michigan. Air-Hydraulics used its Model "H", 10" dia. Air-

Operated Index Tables. The automated operation was drilling and reaming three lug-holes on the work piece.

The production rate was originally estimated at 150 pieces per hour. Air-Hydraulics reports that the actual production rate is 215 pieces per hour.

Here's a case of "three-way" satisfaction, with "Buffalo" Drills. Both the manufacturer and Air-Hydraulics are satisfied. And we are happy that our customer's satisfaction dictated the choice of a new "Buffalo" No. 16 Drilling Machine for this automation job.

For this kind of complete satisfaction, why don't you specify "Buffalo" Drills? Contact your "Buffalo" machine tool dealer, or write us direct for full information.



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492 Broadway

Buffalo, N. Y.

Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

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THE IRON AGE, October 8, 1959

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#### Albert M. Nutter

## Don't Laugh at Manhole Covers

General manager of LeBaron Foundry Co., Mr. Nutter has developed new methods and designs for making manhole covers.

When most foundrys were closed during the recession, Le-Baron had work to do.

Although most people wouldn't even think about it, there are methods of upgrading manhole covers to make them more usable under all types of conditions.

Albert M. Nutter, general manager of the LeBaron Foundry Co., Brockton, Mass., has been a leader in taking manhole covers and improving them to the point where they are engineered, merchandised products.

Some May Laugh—"We make mostly manhole covers which might make a lot of people laugh," says Mr. Nutter. "But we worked five days a week through the bottom of last year's recession, something a lot of other foundries did not do."

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His improved manhole covers have become so outstanding they have been air-lifted to Miami for airport construction. Others have been used widely in parks, roads, bridges and airports in the United States, Spain, South America and Newfoundland. Dampers from Le-Baron were used in the reconstruction of the White House.

Society President—And Mr. Nutter has earned the respect of the foundry industry. He is presently winding up a term as president of the Gray Iron Founders' Society. To reach that post, he served with the Northeastern Foundrymen's Assn., and the New England management group of GIFS. He is also



ALBERT M. NUTTER: Manhole covers kept his foundry open.

vice president of the National Castings Council.

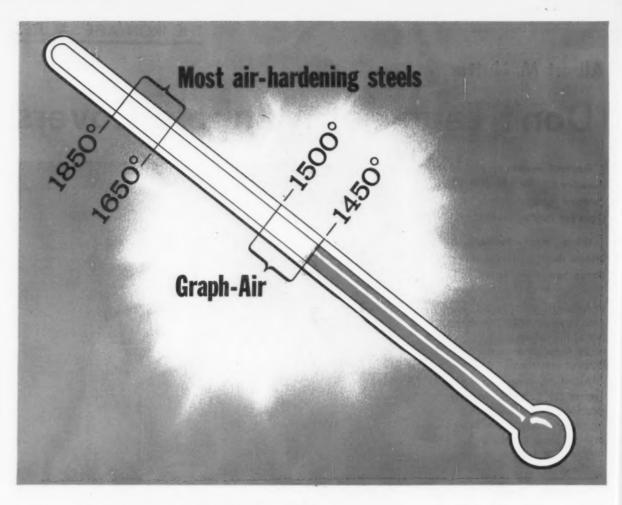
Before becoming president of GIFS, he served on its Handbook and Executive Committees. His term is notable as the period when the industry weathered its worst storm in years.

New Programs—While president, the marketing seminars have been heavily pushed into a cross country operation. Now long range plans for the castings clinics and seminars are being laid for the future. Under his direction, a program to get members to clean up their operating costs was started. New surveys have also been instituted covering marketing methods, dimensional

tolerances of castings and specific types of castings.

Talking about manhole covers, something he likes to do, Mr. Nutter says the company is bringing out newer and better designs. To keep users abreast of improvements, highway engineers are brought into the plant to see progress. LeBaron publishes catalogs, merchandises new designs, and generally talks a quality story.

Long Background—Mr. Nutter first dirtied his hands in the foundry when he was 12 years old. His family has been in the business for 100 years, so he came by it naturally. He was graduated from Harvard and later Harvard Business School.



## **Graph-Air**<sup>®</sup>... lowest-temperature air-hardening tool steel reduces distortion

TEMPERATURE as low as 1450°F. is high enough to air-harden Timken Graph-Air® tool steel. That's as much as 400° lower than most other air-hardening tool steels. Because of this, you reduce distortion and simplify heat treat control. And surface scaling and decarburization are minimized.

Graph-Air machines faster, too, because of its graphitic structure. And it's tougher—outwears ordinary tool steels because of the uniform, diamond-hard carbides in its structure.

With Graph-Air you get longer-lasting accuracy because of its built-in stability. Graph-Air is one of the "family" of Timken Company graphitic tool steels, the most stable ever made.

And the uniformity of hardening and reduced distortion you get with Graph-Air make possible more intricate sections. It's ideal for blanking dies and other parts that must stand up under abuse.

For a high quality tool steel that air-hardens at lowest temperature, specify Graph-Air. Available in solid and hollow bar sizes. For further information, please write The Timken Roller Bearing Company, Steel and Tube Division, Canton 6, Ohio. Cable address: "TIMROSCO".

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## How Serious Is Trade Problem?

Continued rise in U. S. imports, coupled with drop in exports, is creating lots of alarm.

But the changing pattern of world trade offers some sound, long-range hope for relief.

• How serious are U. S. troubles in world trade? And what can the government and business do about them?

Most of the trouble centers around the drop in U. S. exports, while imports keep rising. The result: American earnings abroad have fallen short of U. S. payments to foreign countries.

Drain on Gold—Net payments by the U. S. in the second quarter (on a seasonally adjusted basis) were close to \$1 billion. If this trade deficit goes on, foreign demands for payment will cut deeper into U. S. gold reserves. This, in turn, might weaken the backing for the dollar.

The import rate so far in 1959 has continued the increase noticed in every quarter of 1958. During this year's second quarter, imports of goods reached a new high.

Temporary Hopes — There's hope, however, that some of this increase may be temporary. Certainly some of the \$50 million advance in steel imports resulted from hedging against the present strike.

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Also encouraging: U. S. exports showed slight gains in June and July over the same months in 1958. But for an industrial nation like the U. S., it's not comforting that most of the gain was in foodstuffs. And the rate fell again in August.

Long-Range Hopes — Only by taking the long-range view is it

possible to be encouraged about trade prospects. From now on, a new pattern of world trade will be developing. The post-war trade and aid program to revive Europe is over. European marketers are now tough competitors, both in the U. S. and in other foreign trade areas. The same applies to Japan.

Trade emphasis will now shift to the underdeveloped nations of Africa and Asia. The U. S. wants European and other industrialized countries to take an important part in providing capital for these new nations. For their own self-interest, other industrial nations see the benefits in sharing the capital burden with the U. S. Countries in the European Common Market are already studying a 10-year program of aid to less-developed nations.

Some Remedies — Besides a share-the-aid policy, the U. S. has other plans to restore the trade and aid balance. There are efforts to get other countries to lift restrictions against imports of American goods. And U. S. businessmen are urged to step up export activity.

## What Will Boost Output?

Among the methods of increasing output management may be overlooking an unusual one—change.

Most industrial relations thinking is geared toward creating wellbalanced groups of contented workers. But now comes the suggestion from one executive that change also has benefits.

Throw Some Rocks — Try "throwing a rock into the pool" of contented groups to spur production, suggests John Lawrence, executive vice president, Dresser Industries.

"Data from industrial laboratories shows groups which have been together longer tend to perform less well," he adds. His remedy: Periodic re-grouping of personnel to produce fresh ideas.

Mr. Lawrence believes employers can use varied incentives to get best results from employees. He even suggests an element of fear of losing a job can be a powerful stimulant. What Moves Men?—Four methods of motivating employees are offered by Mr. Lawrence:

Short-term incentives (such as piece work rates or bonuses).

Long-term incentives—including the hope the worker may climb in the company.

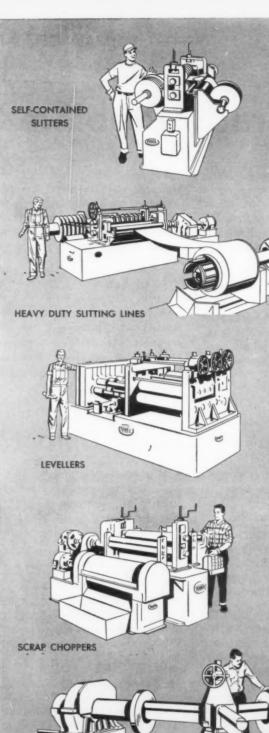
A competitive atmosphere.

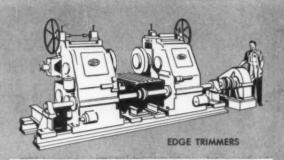
Fear that someone else may take over the job.

#### Carloadings Will Rise In 4th Quarter

Freight carloadings should increase more than 5 pct this quarter compared with the fourth quarter of 1958.

This prediction of Regional Shippers Advisory Boards to the Assn. of American Railroads estimates about 6,740,000 cars will be loaded in the final quarter of 1959. Total for the same quarter in 1958 was 6,394,000.





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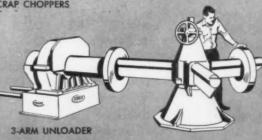
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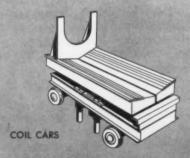
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## **Bigger Small-Cars Coming Next**

### Inevitable: Ford Will Offer the "Comet" in the Spring

It had to happen. Automakers are readying a second generation of small cars.

They'll be larger, more powerful, more luxurious and—naturally—more expensive.—By A. E. Fleming.

 A second economy car called the Comet will be marketed by Ford Motor Co. next spring.

It will be an "aristocratic" version of the Falcon, the 90 hp small car now in Ford showrooms.

Ford's officers are saying little about the Comet. They tell you it will be sold by Mercury dealers. They tell you it is a car with "family size roominess, outstanding economy and elegant styling." And they

tell you it has more trunk space than any other small car.

Silence Is Deafening—It is the same game of silence played all year long with the Falcon, Valiant and Corvair. But, as with the other three, Detroit information leaks on the Comet are gushing like oil wells in Oklahoma.

The Comet—formerly called the "Edsel B" model in secret chambers at Dearborn—will be offered in 2-door sedan, 4-door sedan and 4-door station-wagon models.

Comet to Scuttle Edsel?—It is further expected that in the 1961 model year the name Edsel will be discarded. Comet will become an economy price Mercury. And Mercury will discontinue its swank Parklane series. Comet and the Falcon reportedly will share the same body shell. But the Comet will be bigger with more graceful trimmings. Wheelbase will stretch 114 in. Overall length will measure 195 in., width 70 in.

Comparison Figures—Closest dimensions to these among 1959 models belonged to the Rambler Ambassador: 117 in. wheelbase, 200.2 in. length and 72.2 in. width.

Falcon measurements are 109.5 in. wheelbase, 181.1 in. length, 70 in. width.

What's Up Front — Under the Comet hood—up front, of course —will be a six-cylinder engine or optional V8. The six may be the 145 hp version used by 1960 standard Ford models.

Sharing the same body shell may

#### 1960 Edsel: The Last of a Short-Lived Line?



Ranger 4-Door Sedan: Edsel has been completely redesigned. It is 1 in. lower, 3 in. wider and 5 in. longer

than in 1959. Interior room has been increased. But at last report no 1961 models were planned.

also mean that Comet and Falcon will share the same assembly facilities. These are located at Lorain, O., Kansas City, Mo., and San Jose, Cal., where Falcons are put together now.

Everybody's Doing It—When the Comet shoots into automotive orbit next spring will the Buick-Oldsmobile-Pontiac economy car be far behind? Not likely. The B-O-P entry is also marked for the spring season.

Chrysler Corp. already has its diminutive Dart. This is the 118 in. wheelbase Dodge that is challenging the regular Chevrolet, Ford and Plymouth models. The Dart is 208.6 in. long and 78 in. wide. It has a 145 hp six-cylinder engine plus 230, 255 and 310 hp V8s.

Detroit Gets The Message—The Dart, Comet and forthcoming small B-O-P models are all part of a growing automotive revolution. A market explosion ignited by a consumer preference for different, specialized and more personal trans-

portation. And the fuse is economy.

"For more than a year we've been conscious of a growing interest in economy," says B. D. Mills, Mercury-Edsel-Lincoln general manager. "Just what economy is and how long it will be the theme song of the auto market is hard to say. But it underlies the increasing sales of imported cars and the decision by the Big Three to build smaller size cars.

Trouble With Big Cars—"It also bears on the industry decision to cut back on horsepower, trim, compression ratios, to produce standard gasoline engines and effect other economies in full size cars," he adds.

Another reason for the economy wave among medium price makes is to strengthen this part of the market.

Voice of Dissent—Some say it doesn't need strengthening. Ford's board chairman E. R. Breech, for one.

"If one consults only registration figures," says Mr. Breech, "it may appear the medium price market has shrunk. (Pontiac is the only one in this price class with a bigger share of new car sales this year than last year. Oldsmobile, Buick, Dodge, Mercury, De Soto and Edsel

Sanforized Market—"But if it were possible to separate the more expensive models of the low price lines and add them to the medium price cars," he explains, "we would see that this market has not shrunk at all."

are down.)

Mr. Breech points out medium price names will sell more than 1.5 million cars in the 1959 model year. He believes an expanding medium price market will stem from a rise in the percentage of families earning over \$7500 a year. The figure jumped from 14 pct in 1947 to 22 pct in 1958.

Who Buys What?—It is not hard to see that a basic rearrangement in the low and medium price field is taking place. The Chevrolets, Fords and Plymouths are melting into the middle price range. The Corvairs, Falcons and Valiants are rolling into the low price field.

But it isn't a sure thing that today's buyer can be catalogued by his income. He is unpredictable. He buys cars to meet a specific need or want. He may be a Wall Street baron, yet purchase a tiny 4-cylinder car.

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They Wish They Knew — As M-E-L's Mr. Mills describes the situation: "Four years ago we could predict almost to the unit how many owners of Fords would move up to a Mercury and how many Mercury owners would buy up to a Lincoln. We could see a car on the street and quite accurately describe its owner. The car he drove was a sure tip-off as to whether a man was a merchant, professional man, social climber, hot rodder, rich man or poor man. Today we aren't so sure."

#### The Bull of the Woods





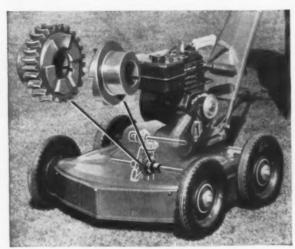
And it really comes out flat! Talk about versatility: This leveler is designed for hot-rolled plate up to 74" wide, and has a guaranteed thickness range of  $\frac{3}{16}$ " to  $\frac{5}{6}$ ". BUT . . . Inland Steel is successfully flattening as low as  $\frac{1}{16}$ " floor plate with it. This particular installation is on a long plate processing line, where shearing is done after leveling. Therefore, the Voss Leveler has been handling plate up to 40 feet in length.

Voss Levelers will solve almost any leveling problem

... at high production speeds. Patented features make possible accuracy and flatness unheard of with any other leveler, equalling or exceeding stretcher-level flatness in many cases. Voss Levelers are now in use in steel, aluminum and other non-ferrous plants, in applications ranging from heavy plate to cold-rolled strip, galvanizing lines, aluminum sheets and many others. Let Voss put its years of experience to work for you. Call or Write today.



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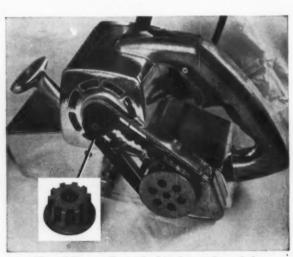
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Tough, wear-resistant Oilite gears, sprockets and clutch shoes keep costs low . . . make power saw more dependable.



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## U. S. Economy Leading Russia's

Economic growth in the United States is moving faster than in the Soviet Union, according to a leading American economist.

But he warns that inflation must be curbed to keep it this way.—By G. H. Baker.

■ Economic growth is moving faster in the United States than in the U. S. S. R., a leading economist tells the Senate-House Economic Committee.

Dr. Colin G. Clark, of the Econometric Institute, Inc., of New York, says it is not true—as is sometimes claimed—that the Soviet economy is expanding at a faster clip than is the case here.

Should Know Better — Government officials and university professors who should know better claim the Soviet economy is expanding by an average 6 pct a year, Dr. Clark points out.

The U. S. economy, he calculates, is expanding by about 3.5 pct annually.

Although he declines to give his own figure for the rate of growth in the U. S. S. R., he says it is "by no means" anything like the 6 pct figure claimed by some economists. The Red figure is below 3.5 pct, he contends.

Reds Deceptive—There are several reasons why it is easy to miscalculate the rate of growth of the Soviet economy, Dr. Clark says.

1: Soviet statistics are not reliable. They are invariably inflated or distorted by the government agencies that issue them to give apparent factual basis to inflated political claims of Soviet leaders.

2: We must keep in mind that the U. S. S. R. took a terrible beating in World War II. Untold millions of dollars worth of plant and equipment, homes, roads, and farms were destroyed. Hence the comeback has naturally been at a higher rate than in countries physically undamaged by war.

3: The U. S. S. R. population is growing slower than that of the U. S. This not only makes for a tight labor supply now and in the years ahead, but it also limits future markets for Soviet consumer and industrial goods.

Inflation Dangerous—Dr. Clark told the Senate-House committee the U. S. will not be able to hold its world economic leadership long if nothing is done here to take the wind out of inflation. The failure of labor, management, and government to come to grips with inflation simply means the continuing dilution of our economic strength and eventual loss of world economic

leadership to the U. S. S. R., he warns.

#### Budget Hopes Falter On Strike Losses

The steel strike has killed almost all hope for a surplus in the Federal budget.

The Eisenhower Administration admits the margin between surplus and deficit is a thin one.

Although total Federal spending in this fiscal year (ending next June 30) will run about \$2 billion over earlier estimates, higher revenues are keeping the "income" column about \$95 million ahead out of the "outgo" column. A healthy business picture is responsible for the spurt in tax collections. Manufacturers' sales and consumer sales are running ahead of expectations.

## Tight Money Closes In

■ Tight money is beginning to pinch.

Recent government and commercial bank moves, which pushed business and consumer interest rates to the highest point in three decades, may cause some industry capital spending programs to stumble. And some willing consumers may find they can't get the funds to buy new cars, appliances, and other items.

New Record Coming?—The prime credit rate now is at a near-record high. This is the rate commercial banks charge their top-rated borrowers. At the same time, the interest rate Federal Reserve Banks charge their customers (banks) is also at a new high.

Not only is interest expensive, but funds are getting harder and harder to find at any price. The budding boom in industrial capital expenditures, high government borrowing, and a new put-it-on-the-cuff consumer movement are rapidly drying up available funds.

Consumer Credit High — Consumers particularly are back in the credit market with a bank. On Aug. 1, consumers owed some \$36.4 billion in time payments. This is \$3.3 billion more than a year earlier, \$639 million more than a month earlier. During July alone, consumers put \$4.2 billion on the cuff, while repaying only \$3.6 billion in old debts.

Record high personal income and savings make most business and consumer borrowers good risks. But the high demand, high cost, and shortage of credit funds are beginning to hurt.

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## Steel Sales Recover in Farwest

### 1958 Sales in the Area Trailed 1957 by 18 Pct

Kaiser survey shows shipments of mill products to Farwestern users fell 1.3 million tons in 1958.

But 1959 is expected to be a big steel-using year despite the strike.—By R. R. Kay.

Steelmakers in the Farwest took it on the nose in 1958. It was a bad year for them.

Their mill product shipments to Farwestern users fell a full 18 pct. But they take some solace in the fact that in the U. S., as a whole, shipments dropped 24 pct.

Kaiser Survey—Farwestern mills shipped only 5.54 million tons of mill products—down from 6.8 million tons in 1957. It was the poorest year since 1954.

This sad news is from a soon-to-

be-released Kaiser Steel survey, "The Western Steel Market." You can get the full report from vicepresident Al Heiner, 1924 Broadway, Oakland 12, Calif.

**Big Year Due**—The steel strike is raising havoc with marketing managers on the Coast. Most are coy about predicting 1959 consumption figures.

But one thing they're sure about. It'll wind up a big steel-using year.

How Products Fared—Here's a rundown on how the various products fared in 1958.

All except cold rolled sheet, galvanized sheet, and tin mill products, took a nose dive. Structural shape shipments sagged 43 pct, plate 31 pct. A good bit of the decline was due to inventory cutting.

Service Centers Are Tops-Tin

mill products were the only ones with a rosy hue. These items are twice as important to the Farwest-ern market as nationally. The West Coast consumes one-fourth of the country's can tonnage.

Steel service centers continue as the mill's big customers. Last year, they took 22 pct of the mill products. That compares with 19 pct for the warehouses nationally.

Fabricators Rate High — Fabricators remain high up as steel users. In 1958, they took over 50 pct of the Farwestern structural shapes and bars.

As everyone knows, 1958 was a poor year for the automakers. Hotrolled and cold-rolled sheet sales fell throughout the country. But not in the Farwestern market. Auto assembly there is not too important a factor.

## Farwest Steel Consumption: 1958 Versus 1957

Products	1958 Net Tons	1957 Net Tons	Pct Change 1958
Plates	925,000	1,333,000	-31
Sheet and Strip	1,065,000	1,144,000	- 7
Struct. Shapes	400,000	702,000	-43
Hot-Rolled Bars and Bar Shapes	930,000	1,085,000	-14
Pipe and Linepipe	360,000	503,000	-28
Tin Mill Products	1,150,000	1,100,000	+ 5
Other Products	810,000	1,053,000	-23
Total	5,640,000	6,920,000	-18
			Source: Kaiser Steel Corp.



Electronic parts courtesy Judson Mfg. Co., Inc., Cornwells Heights, Pa.

### Mirror-bright without polishing, after switch to Sunicut

Boring on a multiple-spindle automatic produced the finish you see on these electronic parts. Sunicut 102-S Cutting Oil saved time and money by eliminating the polishing operation. The same automatic uses Sunicut 102-S to machine metals ranging from titanium to stainless 410.

Sunicut 102-S is one of a full line of cutting oils known throughout metalworking for maintaining long tool life, close tolerances, and fine finishes. There's a grade of Sunicut that can help you improve your product quality—and that's the best economy of all.

To choose the right Sunicut, ask the Sun man; that's part of his service to you. Or write to SUN OIL COMPANY, Dept. IA-10, Philadelphia 3, Pa. In Canada: Sun Oil Company Limited, Toronto and Montreal.

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## Get the Most From Cutting Tools

### Tool Experts Say There's Room for Improvement

You can have maximum output or minimum cost for tools. Not both. But don't forget overall costs.

Cutting tool makers can offer help in fitting the right tool to the job.—By R. H. Eshelman.

Are you getting the most out of your equipment? According to cutting tool experts there's still a lot of room for improvement. That goes for both machine tool users and makers.

One of the pioneers of the industry, C. B. DeVlieg, suggests a reversal in thinking is needed. "Start with the tool," he urges. "It's the cutting tool that makes or breaks the job . . . even the best machine can't succeed with poor tools."

Into Focus—He pinpoints what's out-of-focus: "All machines serve to remove unwanted metal. It's the tool that does the cutting. We assume the machines make the parts. They don't. Cutting tools make chips and leave the parts."

Many firms can cut unit costs and up production if their tool engineers try this basic approach. With today's machine tools, carbides can be used far more effectively, studies show.

Take Your Choice — For instance, General Electric researchers are now ready to suggest specific improvements. Consulting their electronic wizard—the machinability computer—confirms them.

In most cutting operations you can take your choice. You can have either maximum production for your tool dollars or minimum cost. Not both. This is no paradox.

On some jobs maximum production may give lowest overall costs.

Built-in Chip Breaker—GE has coined a term for this approach. It's "Hi-e," for high efficiency. You'll be hearing more of it. Also the Metallurgical Division has come up with a new toolholder. This has a built-in adjustable chip breaker.

Grant Morrison of the Detroit laboratories says this development will allow wider use of mechanical carbide inserts. And that should mean lower tool costs, higher production, for many plants.

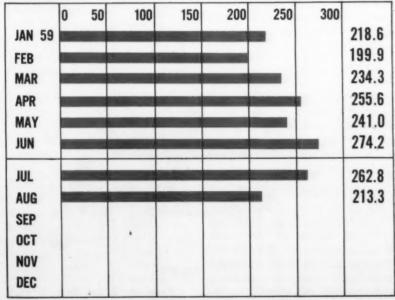
Tool Cost Study — Meanwhile, Wesson Company has just released a six-months study of carbide tool costs. Based on production applications, the survey shows savings up to 90 pct are possible. How? Choose the best basic tool style for each job.

In turning, for instance, Wesson's tool experts say, you can pick from many carbide forms. There are milled-and-brazed flat tools, slug inserts in band-type holders, throwaway inserts in throw-away holders. Sometimes one is definitely best. But often you have a choice.

Save With Slugs — Maybe you can replace flat tools with throwaways. If so, there's a tidy savings of almost \$1 per cutting edge. Savings are even greater if you can use slug inserts instead.

To cut costs with milled-andbrazed tools, consider your purchasing practices. These items are least costly when you get them in large quantities.

## Bookings, Base: 1947-1949=100 GEAR INDEX 1959



Source: American Gear Manufacturers Assn.

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#### INDUSTRIAL BRIEFS

Busy Budd—The Budd Co., Philadelphia, has acquired the Lewyt Mfg. Co., Long Island City, N. Y. It will be operated as a subsidiary of Budd, under the name Budd Lewyt Electronics, Inc. Budd said it will take over the Cleveland Welding Div. of American Machine & Foundry Co. at Cleveland, with the final terms yet to be worked out.

New Corporation — Lewis Steel and Aluminum Co., a newly organized corporation, has assumed the Milwaukee plant and production operations of the Korhumel Steel and Aluminum Corp. of Wisconsin. It will distribute Kaiser Aluminum mill products and process pipe in Wisconsin.

Space Age Plant—Lear, Inc., has opened a new manufacturing plant in Grand Rapids, Mich. It will house the corporation's Instrument Div. and is designed for manufacturing and assembling operations of precision components and systems for aircraft and missiles.

Ninety-First President — F. A. Marston, Boston civil engineer, heads the list of new officers elected for the year 1959-60 by the American Society of Civil Engineers. Mr. Marston becomes the 91st president of the 107-year-old engineering society.

GE's New Operation — General Electric Co. has established a new component called the Internal Automation Operation to study automation opportunities. Headquarters of the operation, a component of the Specialty Control Dept., will be in Schenectady, N. Y.

Stokes Expands — F. J. Stokes Corp. will break ground about Nov. 1 for a 50,000 sq ft addition to the present plant at 5500 Tabor Rd. in northeastern Philadelphia. The new facilities, to be completed in 1960, will increase the company's manufacturing and assembly capacity by about 20 pct.

Chapman to Crane—Stockholders of Chapman Valve Mfg. Co. approved sale of the company to Crane Co., Chicago maker of plumbing supplies. Stockholders voted to sell plant and assets to Crane for \$11.2 million.

Tank Talk—A \$475,000 contract for the fabrication and erection of 16 fuel storage tanks for Chicago's O'Hare International airport, has been awarded to Chicago Bridge & Iron Co. The Horton double-deck floating roof tanks will have an aggregate capacity of 120,000 bbls.

School Days—A new \$1.5 million metallurgical engineering building has been donated to Cornell University by Francis N. Bard, Illinois industrialist and member of the Cornell University Council. Construction of the building will mark completion of the school's engineering quadrangle.

Pullman Purchase — Swindell-Dressler Corp., Pittsburgh, has been acquired as a wholly owned subsidiary of Pullman, Inc. Financial terms of the transaction were not disclosed.

Course Offered—An eight-week course dealing with "Developing Management Skills and Methods for Achieving Good Labor Relations" will be offered again this fall by the Institute of Labor and Industrial Relations of the University of Michigan-Wayne State University.



"Lois, you'll just have to curb that green thumb of yours."

Change for Flexonics — Agreement has been reached for acquisition of the stock of Flexonics Corp., Maywood, Ill., by Calumet & Hecla, Inc. The transaction is expected to take place in January. Flexonics will be operated as a subsidiary.

New Extrusion Plant — A new plant specializing in production of quality lightweight extrusions has been established in Dayton, N. J., by Mideast Aluminum Corp. It will offer finished aluminum extrusion, including anodizing and polishing.

Zirconium Expands—Zirconium Corp. of America has started a \$100,000 expansion of its facilities for manufacturing zirconium oxide. A kiln room and a fabricating and storage division are being added to its plant at Solon, O. Zirconium oxide is a refractory material resistant to high temperatures.

Allen Appointed — Kenneth C. Allen has been appointed secretary of the Committee on Commercial Research of American Iron and Steel Institute, a new position. His office will be at the New York City headquarters of the Institute.

World Wide—The Garrett Corp., Los Angeles, has established Garrett International in Geneva, Switzerland. The international subsidiary will conduct all business and negotiations with Garrett customers outside North America.

Electrical Contract—General Electric Co. has received a \$1.8 million order for the complete electrical system for a new billet and merchant mill to be installed at the Wisconsin Steel Works of International Harvester Co. Included in the system are 11 motors ranging from 400 to 1200 hp.

Army-Navy — Two Army contracts totaling over \$30 million for the Hawk missile have been awarded to Raytheon Manufacturing Co., Waltham, Mass. The Navy awarded a \$137,600,000 contract for F4H-1 allweather fighter jet aircraft to McDonnell Aircraft Corp., St. Louis.

How a Shrink-Fit E-x-p-a-n-d-s Profits

## Copeland Saves \$100,000.00 A Year

Heating

with TOCCO\* Induction Heating



#### **Press-Fit Method**

In the assembly of motor-compressors for their air conditioning and refrigeration products, Copeland Refrigeration Corporation formerly employed air presses for force-fitting their 1/5 HP through 1½ HP motor housings and stators. This method was costing Copeland \$100,000.00 annually in labor, material and quality control expense to maintain the high quality of its product.

#### **TOCCO Shrink-Fit Method**

To reduce these costs, Copeland installed a 30 kw, 10,000 cycle TOCCO Induction Heating Unit. Motor housings are heated to 400°F. resulting in up to .013" expansion. After cooling, the motor housing shrinks to form a predictable and perfect fit with the stator. Stator scoring and distortion are eliminated and \$100,000.00 annual saving

Whether your production problem is shrinkfitting or higher temperature applications such as brazing, heat-treating, forging or melting, look to TOCCO for an economical solution to any metal-heating problem.



#### THE OHIO CRANKSHAFT COMPANY

	n Today—NEW FREE Bulletin
Please send copy of "T Principles, Applications, Ed	Typical Results of TOCCO Induction Heating-
Position	
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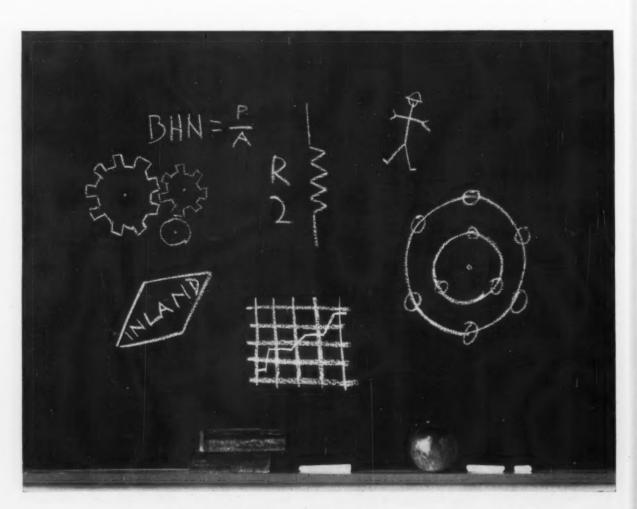
### 14,089 Inland employees went to school last year

Many went because they were enthusiastic about their jobs—inspired by the advancement opportunities at Inland. Others went because Inland, ever on the watch for men capable of developing their abilities, sought them out—found them—encouraged them to take the next step.

At Inland, this thoughtfully planned system of seeking for such men within the company, has now been in continuous operation for more than fifteen years. Because of it, more than 70% of Inland's supervisory staff have come up from the ranks—30% more from Inland's College Recruitment Program. Because the system encourages personal growth, the process never stops. It may begin with on-the-job training programs in which 3,842 employees participated last year. It can continue through Inland's programs in conjunction with leading educational institutions, such as Harvard, Purdue, University of Chicago and Wabash College.

With literally thousands of Inland men building their own futures, a new kind of climate is created—a climate in which men find real satisfactions in their work and the products of their labor. It results, we believe, in a growth-minded organization—a company dedicated to ever better service and products for every Inland Customer.

Building Today, with an Eye to Tomorrow



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INLAND STEEL PRODUCTS COMPANY
INLAND STEEL CONTAINER COMPANY\*
INLAND LIME & STONE COMPANY\*
\*Division



F. W. Chambers, appointed executive vice president, Strategic Materials Corp., Buffalo, N. Y.

Casting Engineers Inc.—J. H. Cadieux, named president.

Stran-Steel Corp.—M. M. Anderson, appointed vice president, engineering.

Alabama Metal Lath Co., Inc.

—H. B. Brown, appointed vice president, sales.

Vulcan Rail & Construction Co.

—L. C. Jacobsen, elected president and chief executive officer.

Kennecott Copper Corp., Utah Copper Div. — T. B. Rees, appointed purchasing agent.

Shenango Furnace Co., Centrifugally Cast Products Div.—W. P. McKown, appointed general manager, Dover, Ohio.



C. W. Guyatt, appointed chief industrial engineer, Reynolds Metals Co., Richmond, Va.

Morrison Steel Products, Inc.— W. G. Tulowiecki, named asst. to the president.

The Weatherhead Co., Fort Wayne Div. — A. A. Colberg, named controller.

A. O. Smith Corp., Electric Motor Div.—R. E. Axthelm, named supervisor, application engineering.

Aluminum Co. of America—E. D. Verink, Jr., named manager, chemical and petroleum industry sales.

Westinghouse Electric Corp., Sturtevant Div.—M. J. Kolasa, appointed Detroit district manager.

Edward Valves, Inc. — E. A. Sticha, named chief research metallurgist.

Archer - Daniels - Midland Co., Federal Foundry Supply Div.—
Anton Dorfmueller, Jr., appointed asst. general manager, and R. J. Mulligan, general sales manager.

Kelsey-Hayes Co., Metals Div.— H. D. Stone, named manager, sales and marketing.

E. W. Bliss Co., Container Machinery Div.—D. J. Lundstrom, appointed asst. to the sales manager.



Marshall Schober, named manager, marketing, Latrobe Steel Co., Latrobe, Pa.



A. D. Ring, appointed asst. director, salary, pension, and insurance administration, Jones & Laughlin Steel Corp.

Republic Steel Corp. — W. D. Merkel, named district sales manager, Youngstown district.

The Babcock & Wilcox Co., Tubular Products Div.—J. J. Koss, appointed Milwaukee district sales representative; T. J. Nagle, named sales representative, Chicago district office.

Armstrong Bros. Tool Co.—W.
T. Keating, named Boston area
(Continued on P. 99)



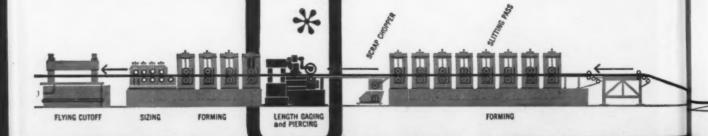
**David Ferguson,** appointed asst. to vice president, Chicago, U. S. Steel Corp.

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## 10,001

Heart of the new McKay Electronic Cold Roll Forming Line is the measuring section featured above. It can be operated by command information manually dialed into the electronic control or automatically with punched cards.

(Patent applied for)



The line illustrated above was recently purchased by a large building products manufacturer for high speed production of roof and floor deck.

## different lengths...

# ...WITHOUT A MANUAL ADJUSTMENT

#### McKAY'S ELECTRONIC LENGTH GAGE

has a memory permitting instantaneous changes in cut lengths and scheduled quantities as well as precise control of notch and punch spacing on each length.

A transistorized electronic control reads and stores information from punched cards and utilizes an electronic counter to trigger a punching and notching press

at precise intervals as commanded by the coded data on the punched cards.

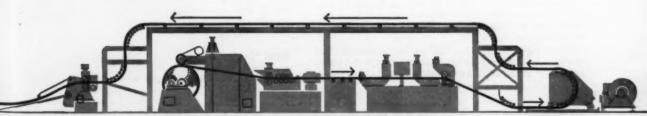
Now! the planning department can schedule the output of a forming or cut-up line without waiting to group identical lengths.

Now! down time previously required for manual length gage adjustment is converted to productive time.

Now! in addition to length control, precise spacing of notches and punches can be controlled and changed by commands received from coded information on the standard data processing card.

BE SURE TO GET THE FULL STORY ON McKAY'S ELECTRONIC GAGE FOR YOUR PRODUCTION LINES.

Call or write the McKay Machine Company, Youngstown 10, Ohio.



COIL HOLDER COIL PEELER DECOILING LEVELER

STRIP WELDER

LOOPER





## LARGEST POWDER-METALLURGY BILLET SLICED BY BRUSH BERYLLIUM: COSTS SLASHED BY DOALL BAND MACHINING

Here's another example of the way modern band machining can change production methods and save money—\$51,000 in this case.

Brush Beryllium Company, Cleveland, Ohio, formerly pressed hexagonal 30" x 30" nuclear reactor plates of high-purity beryllium on a one-at-a-time basis. This process required an extra thickness allowance and additional machining to remove excess

Then engineers of Brush Beryllium Company realigned the entire project to take advantage of the speed and savings made possible by modern band machining methods.

Now gigantic 1¼-ton billets are pressed—the world's largest powdered metallurgic part—large enough to make 13 reactor plates. The DoALL Band

Mill using a Demon\* High-Speed Steel Blade slices the huge billet into 1" and 2" plates. Result: spec-tacular savings in production time and over \$51,000

Here again DoALL Sawing Specialists were privileged to assist with their specialized machining knowledge and experience. More than 200 DoALL Sawing Specialists, located from coast to coast, are ready to help industry with its machining problems. Call your DoALL Specialist today. His expert help and the services of the DoALL Research

Laboratory are free.

FREE! "Saw Blade Selector Chart" helps operators improve their sawing techniques . . get this wall chart from your local DoALL store.



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#### (Continued from P. 95)

sales representative; R. E. White, appointed Eastern district sales manager, New York headquarters; J. F. Gaudian, appointed asst. sales manager.

The Weldon Tool Co.—S. E. Smith, Jr., appointed asst. sales manager.



A. L. Wheeler, appointed manager, sales, Peninsular Steel Co.



A. S. Rairden, appointed works manager, Palmer (Mass.) plant, Colorado Fuel & Iron Corp.

The Budd Co., Defense Div.— W. H. Knowles, appointed sales manager.

Toledo Pipe Threading Machine Co.—R. S. Bollin, appointed chief engineer.

Brown-Wales Co.—J. F. Ellison, appointed purchasing agent.



William Smith, elected treasurer, Rolle Mfg. Co., New York.

Robertshaw-Fulton Controls Co., Bridgeport Thermostat Div.—A. G. Pison, appointed manager, quality control, Milford, Conn.

Joseph T. Ryerson & Son, Inc.— L. B. Clay, appointed sales manager, Houston, Texas.

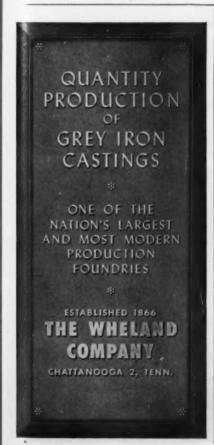
Crucible Steel Co. of America— C. R. Paradee, appointed field ser-(Continued on P. 101) Screwstick is a

## PROFIT IMPROVER

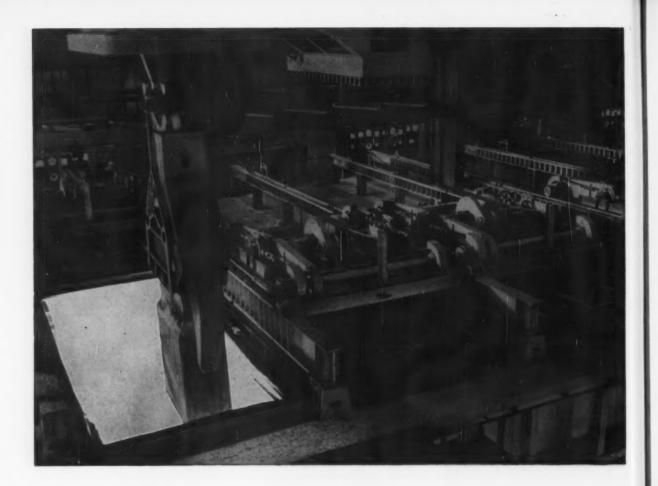


SCREW COMPANY

WILLIMANTIC, CONN. Chicago, III. Detroit, Mich.



959



## As more and more steel companies expand they specify SALEM Soaking Pits

When steel companies require new soaking pits to heat ingots for rolling, more and more they are specifying Salem. One steel company operating official recently said, "The previous installation heated more steel ingots ready for rolling with less fuel consumption, less maintenance cost and better temperature uniformity than any other type of pit in our plant, so we have again turned to Salem-Brosius." The recently completed pits shown above are good examples of Salem-Brosius' advanced design. They are of the

2-burner, single-end top-fired type, fitted with needle-type metallic recuperators and capable of placing 200 tons of steel under cover per pit.

Good performance reports are typical...not only concerning soaking pits, but all other Salem-Brosius heating and heat-treating furnaces. Salem-Brosius engineers are well known for their ability to design furnaces for maximum uniform output at minimum operating cost. If your plans call for replacing old furnaces or adding new ones, why not ask us to bid? There will be no obligation.



Salem Engineering Limited, Toronto, Ontario • Salem Engineering Co., Ltd., London & Milford, England • Salem-Brosius, S.A., Luxembourg • Salem-Brosius, S.A., Paris, France • Alloy Manufacturing Corp., Pittsburgh, Pennsylvania • R. H. Freitag Manufacturing Div., Akron, Ohio • General Ionics Corp., Pittsburgh, Pennsylvania

(Co

(Continued from P. 99)

vice metallurgist, east central region; E. F. Anderson, appointed field service metallurgist, New England and eastern regions.



**K. B. Dietz,** appointed New York district sales manager, The Colorado Fuel & Iron Corp.

Minneapolis-Honeywell Regulator Co., Brown Instruments Div.— F. P. Kelly, appointed manager, manufacturing operations.

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PROMPT WAREHOUSE SERVICE ONLY

Most Complete Stock in America of

BLUE TEMPERED SPRING STEEL

We believe that the way to sell is to carry a stock which permits satisfying any reasonable warehouse demand.

878 Rindge Ave. Ext. Phone UN 4 2450 CAMBRIDGE 40, MASS.

Branch 3042-3058 W. 51st Street, CHICAGO, IL Phone: Grovehill 6-2600 Curtiss-Wright Corp., Princeton Div. — R. E. Johnson, appointed general sales manager; Robert Greiff, appointed asst. sales manager, Industrial Control Products.

Vitro Engineering Co. — J. C. Tourek, appointed vice president, engineering.

Superior Foundry Inc.—R. W. Barker, appointed general foundry superintendent, Superior Foundry Div.; R. K. Kelly, appointed general foundry superintendent, The Allyne-Ryan Div.

Cameron Iron Works, Inc., Pressure Control Equipment Div.—J. F. Allen, promoted to manager, manufacturing.

Production Machinery Corp.— G. M. McComb, named sales engineer.



P. B. Case, appointed asst. manager, Marietta Works, Union Carbide Metals Co., Div. of Union Carbide Corp.

Republic Steel Corp., Steel & Tubes Div.—M. B. Steele, appointed manager, New York sales district.

General Electric Co.—B. J. Alperin, appointed manager, product engineering, Everett Foundries.

Latrobe Steel Co.—T. A. Miller, named resident salesman, Rockford, Ill.

The W. W. Sly Mfg. Co.—J. J. Finnerty, appointed Chicago sales representative.

HOW

to make Screwstick your own

Profit
Improvement
Program

at how quickly and easily Screwstick loads into a power driver. Just insert Screwstick and the entire stick of screws feeds automatically. Improves profit because Screwstick can cut assembly time in half.

Look at the onehand operation you get with Screwstick. Operator can position parts with one hand, fasten with the other. Constant measured torque produces uniform tightening. Send for a free sample of Screwstick another example of the way you be nefit from American's Profit Improvement Program.

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Fasteners comes from merican

Willimantic, Conn. Detroit, Mich. Chicago, III.

#### NATIONAL ACME'S

"ZONE OF RESPONSIBILITY" INCLUDES ALL PHASES OF COST REDUCTION

Check YOURS...Then Check National Acme

Direct Costs: these include direct dollar savings as realized by Minneapolis Honeywell . . . an "every day" job for Acme-Gridleys.

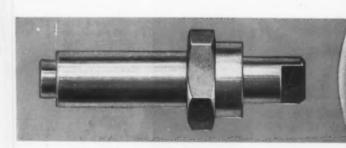
Indirect Costs: effecting important savings in maintenance, downtime, scrap reduction, tool costs, etc.

**Product Redesign:** teaming with your design group to take full advantage of Acme-Gridleys' cost reducing capabilities.

Direct Material Costs: our engineers provide important savings in this area by constantly matching machines and tools to modern metallurgical problems.

Make-or-Buy Reviews: in many cases our Contract Division can assume your production headaches and relieve you of immediate capital investment.

Spot Modernization: pioneering in modern tooling methods, and the flexibility of Acme-Gridleys can provide many "on-the-spot" savings.

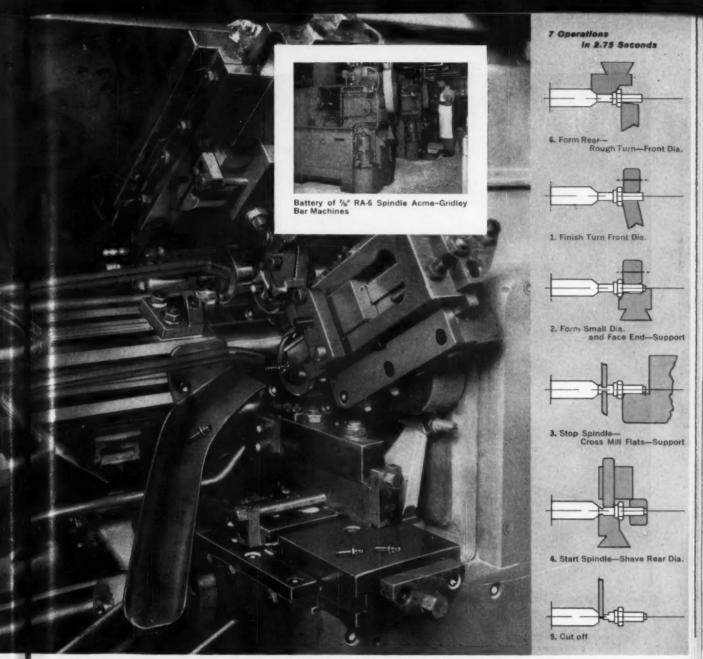




At Minneapolis Honeywell

# ONE ACME-GRIDLEY REPLACES FIVE SINGLE SPINDLE MACHINES

... Saves 200% in Machine Hours

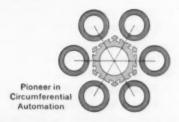


Close up of tooling zone showing 3rd, 4th and 5th position operations

... in addition the reject rate is reduced 200% and operator hours slashed 300% in the production of a precision center post component for residential thermostats. What's more, with one machine, one set of tools, and one operator doing all machining in the primary setup, quality control is greatly simplified, and valuable floor space saved. Still further savings result from greatly reduced machine maintenance.

Such drastic savings are possible for Minneapolis Honeywell because of inherent Acme-Gridley features such as independently operated tool slides, the extreme accuracy and flexibility of direct camming, and wide open tooling zones. Rugged and versatile ½" Acme-Gridleys fit right in with Honeywell's program of "Total Machine Utilization"; will pay off for years to come by economically accommodating the materials and setups Honeywell requires in the production of small, high quality parts for their precision instruments.

Get the complete story on how Acme-Gridley Automatics provide industry's most modern approach to cost reduction. Call, write or wire.



## National Acme The National Acme The National Acme To Building Acme Company 175 E. 131st Street Claveland & Ohio

Sales Offices: Newark 2, N. J.; Chicago 6, III.; Detroit 27, Mich.



Here's an expert at work, saving you money at the right time — during design. Like all C/R sales engineers, he's an experienced, well-trained representative whose knowledge springs from a solid engineering background. His ability to sit down with you during the design phase will help develop the most efficient and economical solutions to your problems.

For example, he will often suggest design modi-

fications that may save substantial production costs. Again, he will advise against specifications or seal types which he knows from experience will lead to service problems and user dissatisfaction. His personal "value analysis" of your fluid sealing problems, backed by the quality of these Chicago Rawhide products, can save you money. Welcome him when he calls to see you.

#### CHICAGO RAWHIDE MANUFACTURING COMPANY

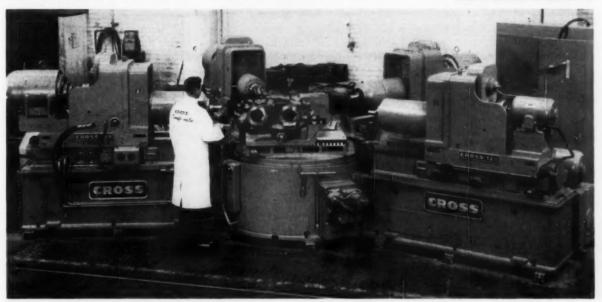
1219 ELSTON AVENUE . CHICAGO 22, ILLINOIS

Offices in 55 principal cities. See your telephone book.

In Canada: Manufactured and Distributed by Chicago Rawhide Mfg. Co. of Canada, Ltd., Brantford, Ontario.

Export Sales: Geon International Corp., Great Neck, New York





FOR LOW VOLUME: Housing for military hardware with hardness of Rc 42 is machined in automated

setup at a rate of six pieces per hour. Setup does job of four machines with big cut in manual handling.

### Consider Automation Growth Key to Plant Modernization

By A. J. McLaren-Vice President, The Cross Co., Detroit

Metalworking managers are no longer looking on automation as just mass-production magic.

Building block concepts, standardized components and shifts in buying methods result in big bargains in modernization for general manufacturers.

• One of management's most perplexing problems is capital investment. Executives everywhere wish that they had sure-fire answers to many questions to guide them in making decisions.

Consider for example, proposals such as these: expansion of a sub-

sidiary, transfer of a product line to a different plant, erection and equipment of a plant for a new product, replacement of a group of obsolete machines.

Right answers may spell the difference between corporate success and failure. With such high stakes, there's little room for error. Yet the human element with all its shortcomings is more dominant here than in any other business activity.

Management's Job — Decisions about capital expenditures are the sole responsibility of top management. The job is one of the most important in today's business operation and represents a full time

job for a member of the top management team.

Final decisions in this area must be predicated on as many facts as can be assembled to minimize risk and reliance on "intuitive" judgment. One of the oldest, but still the best tool available for guiding decisions, is the feasibility study.

Management must participate in the study and act as a steering committee to insure that every factor in the business is thoroughly and accurately considered.

What It Is—The feasibility study will tell when automatic metal cutting operations can be made profitably. The study may be formal or informal with the analysis-study team large or small.

However, all key departments should be included: sales, market research, production, manufacturing, engineering, product design, and maintenance, among others.

Whether building an entirely new production setup, or upgrading an existing facility, management today is faced with three distinct courses of action: simple replacement of old equipment with new equipment of the same kind, adoption of automated methods and equipment or a combination of both of these.

Complex Decision — However, final decisions are never as clearcut as this may seem. Capital investments are being made for profit motives.

Profits in any efficient production facility will largely be influenced by a host of factors: pricing policies, sales costs, sales forecasting, market potential and penetration, product design life, and many others that all but simplify final decision.

The primary objective is to get

the best possible facility that will return the highest profit with minimum risk. A feasibility study must include a searching analysis of automated methods and a company's specific processing problems.

To Stay Ahead—It's no longer sufficient just to replace or supplement old equipment with new. Processes must be modernized and operations combined if producers are to stay ahead of the wage-cost spiral.

Any modernization effort today that does not include a thorough analysis of automated methods is likely to fall short of true modernization goals. The feasibility study is the only sure way to evaluate such methods and the return that can be expected from the investment.

The key to a feasibility study is a good investment analysis—one that accurately compares net investment, operating cost and profit of existing methods and equipment with proposed methods.

Study Gets Results-Some com-

panies are finding major savings. In one instance, a single Cross four-way boring machine cost \$161,285 less initially than four individual boring mills that would be required to perform identical operations on a cast steel support housing.

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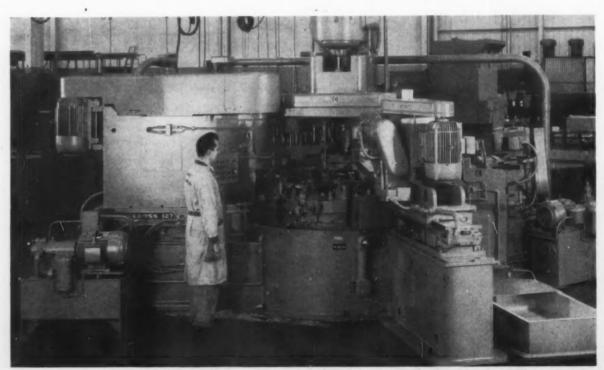
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In addition to this savings in investment, yearly operating cost of the Cross automated special is \$30,000 less than the conventional setup proposed.

For just such economies as this, more and more medium and smaller size company studies are finding automated equipment and methods both practical and applicable for their short-run, low-volume jobs. And, many of these companies could not realistically consider automated machine tools just a few years ago.

Why Is It Spreading?—The application of automated methods and equipment is increasing in non-mass-production metalworking industries for very definite reasons: greater flexibility, machine tool standardization, advances in machine technology, lagging competi-



BUILDING BLOCK IDEA: About 80 pct of this automatic dial index machine comes from builder's

standard units—wing bases, feed units, machining units. Only fixturing and spindle setup are special.

tive position of growing numbers of manufacturing companies, and hedge against inflation.

Among the industries giving impetus to the trend to automation on medium and lower volume production jobs are farm equipment, railroad, steel, missiles, household and office machinery industries among others.

What makes automation practical on medium and low volume, short run jobs is the flexibility and versatility that is now possible with present day machine tools. In most cases, automated equipment can now be designed to process a complete product mix.

Handles Product Mix — Frequently, this can be done without any major changes in machine setup. Formerly, most automated machine tools were only designed to process a single part of unvarying design.

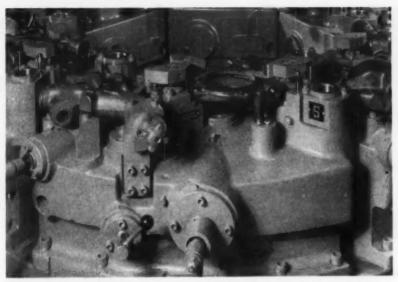
The most important single reason why automated methods and equipment are becoming more and more practical and profitable for the smaller company is the building - block standardization being achieved in the design of this equipment.

Standards Lengthen Life—These standards reduce new machine cost and provide almost unlimited adaptability of the building blocks in making up machines. The result is greatly extended life of these standard components and increase in salvage value.

This standardization of automated transfer, dial and special combination machines sold to automotive and other mass-production industries in the past few years is now contributing to the spread of automation in another way.

Trade-In Market—The mass producers are now trading in used equipment to defray some of the cost of completely new lines. For all practical purposes, most of these building blocks are as good as new.

However, the mass producer can't interrupt his production to have existing machines rebuilt.



UNIVERSAL SPECIAL?: Closeup reveals how dial index machine can handle wide variety of parts. Work is cast iron pump body. Typical operations include drilling, boring, milling, spotfacing and chamfering.

These trade-ins are finding ready application at very low cost in rebuilt machines for medium and smaller plants. In some cases, they are re-sold to the mass producer in an entirely different machine.

Ultimately, the smaller plants will also profit by the high trade-in value created by standardization when they rebuild their automated installation—or add to it.

Technology Spreads — Still another reason for increased modernization at this time is the acceleration in the application of new machine technology. This has created real bargains for machine tool buyers.

A typical example of how this happened is a new transfer system. It eliminated idle station fixtures saving the buyer \$75,000 in fixture investment he would otherwise have had to pay.

Mass-production companies have found, as increasing numbers of medium and smaller companies are now finding, investments in modernized machine tools are the best hedge against inflation. If for this reason only, timing of modernization projects by many medium and smaller plants is vital.

Greater Return—Not the least important factor in the spread of automation is the dire necessity of a growing number of manufacturing plants to improve their competitive positions. Companies with declining profit margins and a plant full of antiquated methods and equipment clearly recognize the only course left for survival.

Most managements are aware that good times and increased profits for their companies won't be inherited automatically by a booming economy. Net gains must come from modernization: vastly improved methods and equipment, cost cutting and efficiency.

Automated methods may or may not be applicable in any form for some plants. On this question, however, the penalty for guesswork can be fatal. The only sure answer must come from an objective appraisal of what is available and how it can be made to apply profitably.

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### Tape Control Removes Lost Time From Turret Press Cycle

Machine speeds have valid meaning in production planning when a taped cycle removes the variables of manual steps.

This flexible press setup puts short-run piercing into the longrun mass-production class.

• With automation a key factor from the very beginning of its design, a new turret punch press turns out high production in locating and punching holes in sheet metal or plate. Numerical controls take over all press functions.

The setup produces openings of any size or shape up to 8-in. diam in as little as one-fifth the time required with manually operated units of the same size. And also there's no need for multiple die sets, layout, tool setup or multiple handling.

Developed by the Wiedemann

Machine Co., King of Prussia, Pa., the unit is called the Wiedematic. Its formal demonstration took place last week at General Electric's Specialty Control Dept., Waynesboro, Va.

The unit's numerical positioning control, is a General Electric Mark III setup. It governs two linear and one rotary motion on the Weidematic: left-and-right and in-and-out table motion, plus turret rotation.

Saves in Many Areas—In his remarks at the demonstration, Dr. L. T. Rader, General Manager at the Waynesboro plant, emphasizes, ". . . the savings on automated machine tools go far beyond direct labor. Important savings are to be found in areas of better quality, simplified procedures, reduced floor space, reduced inventory and elimination of special tools."

Because of the speed of the

automated unit, it'll mean a \$20,000 reduction in inventory. The flexibility of the machine should mean a 2140-sq ft savings in sheet metal storage space.

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Dr. Rader adds "In my mind, possibly the most significant advantage of numerical control is in freeing engineers to do real engineering work." The unit's a proving ground for their work on a numerically controlled system.

**Tape Is Boon** — Engineering changes can be made right on the tape without bothering the shop with changes in job descriptions or notes on drawings.

Tape preparation can be done in two ways: with a standard tape punching machine, working to a simple work chart listing the X and Y dimensions and turret station number for each opening, or with



AUTOMATION TEAM: Looking over the new setup are (left to right) L. T. Rader, General Manager, GE's

Waynesboro plant, T. A. Wiedemann, Vice President, and O. F. Wiedemann, President, at Wiedemann.

an Auto-programmer developed by General Electric.

This latter unit produces a tape from a dimensionless line drawing using an optical system. The method reduces drafting time about 75 pct.

**Simplicity Itself** — Operation of the Wiedematic is simplicity itself. All the information for a complete job is carried on the eight-channel 1-in, wide tape.

The operator loads the material on the press table, inserts the tape in the reader and starts the press. Immediately, the material starts for its designated centerline dimension at a speed of 600 to 800 ipm. At the same time the turret rotates to bring the proper punch and die (any one of 36 sets) into piercing position in less than 2 seconds.

As soon as all motions are completed, the press trips. During piercing, the information for the next hole is read.

No Lost Time—Then there's no lost time before the table and the turret are on the move again. Since all hole locations are taken from a zero reference, there's no accumulative error.

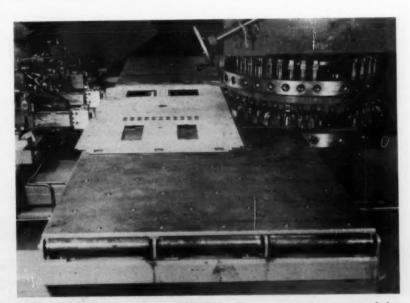
The unit at Waynesboro has a capacity of 100 tons and a throat depth of 63 in. It can pierce sheet metal or plate up to 60 x 100 in. x 3% in. thick in a single handling at a production rate of about 30 hits per minute.

"When one considers," said Otto F. Wiedemann, president of the machine tool company, "that non-automated Wiedemanns cut short-run piercing time and costs from 60 to 90 pct over conventional methods, the significance of the phenomenal operating speed and flexibility of the Wiedematic becomes more important."

Can Slice Inventories — "From the standpoint of inventory alone," Mr. Wiedemann explained, "the Wiedematic can well mean a revolution in planning. When the exact duplication of a job, be it simple or complex, is just a tape-out-of-the-file away from being in production, management can well re-evalu-



TAPE DOES THE WORK: Operator stands by as tape takes over automatic sequence of locating and piercing holes at 30 hits per minute.



SPEEDS SHORT RUNS: As directed by the tape, turret rotates to bring proper punch and die set into piercing position in 2 seconds or less.

ate its minimum making runs and number of pieces carried in stock."

With only one punch and die of a size required, regardless of the number of openings, tooling costs are held to a low. Large rectangular openings can be made by a series of hits with a single tool.

As automatic turret rotation brings a tool into piercing position, mechanical locking of the turret insures tool alignment. Any punch and die combination can be replaced in 1½ to 3 minutes.

### Fill Many Ferrous Needs With Two Alloy Steels

A "simplify, standardize, save" program is based on just two nickel alloy steels.

Here is how you can put such a program to work.

• Machinery and equipment manufacturers are faced with a multiplicity of alloy steels these days. And specifications for one design may call for a number of these steels.

This situation presents a number of problems. An assorted selection of steels must be kept in stock. A number of heat treat cycles must be used. Machining procedures are varied. Mix-ups can occur very easily. Production costs are high.

Manufacturers have been calling for some sort of standardization for years. What they are looking for are a few versatile, not overly expensive steels.

Need Only Two Steels—From time to time many producers and distributors suggest combinations of a few "matched" steels. It is fairly well agreed that the great majority of industrial plants can settle on as little as two alloy steels for most of their alloy requirements.

One of the recent combinations

suggested consists of a steel for through-hardening, AISI 4340, and another steel for case-hardening, AISI 4615-20.

Why were these steels selected? Just how versatile are they? What special properties do they possess, if any?

Through-Hardening Steels—The first steels containing the three alloying elements, nickel, chromium, and molybdenum, were introduced during World War I. The composition containing 1.85 pet Ni, 0.80 pet Cr, and 0.25 pet Mo, known as 4340, quickly became the most popular.

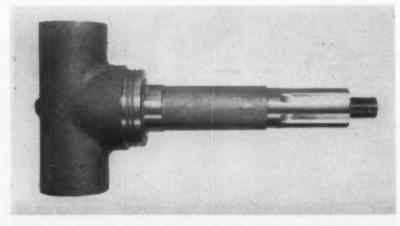
Through thirty years of metallurgical developments, 4340 has remained a popular choice for use in quenched and tempered parts.

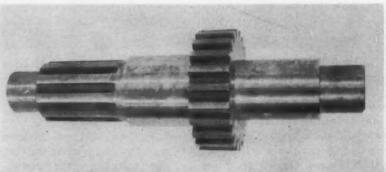
The best combinations of strength, ductility, toughness, and resistance to fatigue and other unusual service are obtained when a steel is thoroughly hardened and adequately tempered. The ability to harden throughout parts of increasing section size is obtained by the proper choice of alloying elements.

Good Hardenability—Type 4340 compares very favorably in hardenability with all other steels of comparable price and total alloy content. Yet, it is amenable to all of the usual processing treatments. It can be fully annealed to facilitate machining, is weldable under proper conditions, and responds readily to all forms of heat treatment.

This steel is further distinguished by the fact that it is machinable at hardnesses up to 450 Brinell, somewhat above the level common for other alloy steels.

Has Varied Uses—It is widely used in the construction of highly





HOLDS UP: King post (top), made of AISI 4340, and gears and pinion shaft (bottom), made of AISI 4620, are tough, strong, and wear resistant.



HITS THE MARK: AISI 4340 is used for rifle parts because of toughness and high strength/weight ratio.

stressed parts of machinery and structural applications. Modifications of this composition, sometimes with variations in carbon content, are used as tool and die steels.

They can also be used for parts to be exposed to high temperatures, and for such demanding applications as ordnance, armor, and other military items. A 4340 modifica-

tion was the first steel to be used in designs based on the high strength ranges above 240,000 psi.

Case-Hardening Steel—Carburizing or case-hardening is ordinarily applied where a hard, strong surface layer is required over a core tough enough to resist shock or soft enough to facilitate machining.

Nickel alloy carburizing steels

are very widely used for carburized parts. They have a long record of successful application in industry. They are well suited for heavy duty service and respond readily to the usual commercial carburizing practices.

These steels provide cases of high fatigue and wear resistance. By the selection of the proper cycle of treatments after carburizing, they

#### Drill Deep With AISI 4340

Oil field crew checks stack of AISI 4340 pipe used in drilling this oil well that goes down 25,340 ft. Why was 4340 chosen? The drill string must resist severe torsional stresses as it transmits the rotating force to the bit. It must also have a high strength/weight ratio. Normalized and tempered to 115,000 psi yield strength, this nickel alloy steel became the top 10,500 ft section of the string.





**NEEDS MUSCLE:** The front axle of this power grader uses rugged AIS1 4340 steel for good strength properties in a quenched and tempered part.

#### Chemical Composition Ranges, pct

	SAE Number	AMS Number	С	Mn	NI	Cr	Mo
4340	4340	6415	0.38-0.43	0.60-0.80	1.66-2.00	0.70-0.90	0.20-0.30
4615	4615	6290	0.13-0.18	0.45-0.85	1.85-2.00		0.20-0.3
4620	4620	6294	0.17-0.22	0.45-0.65	1.65-2.00		0.20-0.3

can furnish a wide range of core properties.

Cores Develop Strengths—Types 4615-20 are accepted as the par against which the performance of other carburizing steels are compared. The combination of 1.85 pct Ni and 0.25 pct Mo provides good hardenability so that the cores of carburized parts will develop the necessary strengths.

Lighter sectioned parts will be

made of the 4615 grade with 0.15 pct carbon, while the higher carbon 4620 with 0.20 pct carbon is used for heavier components.

Type 4620 carburized steel is well known for its ability to withstand the rigors of carburizing and subsequent heat treatment with a minimum of warpage and distortion.

Saves Money—Even for gears that must be ground after process-

ing to obtain the required precision, the utilization of 4620 might well save money over the leaner grades. This is due to the decreased stock removal necessary.

Type 4620 also displays a high degree of resistance to cracking during grinding, which is a problem often encountered.

The excellent case toughness of carburized 4620 is well documented. A tough case allows parts to be straightened after carburizing with a minimum of breakage.

The combination of the two properties, case toughness, and minimum distortion, presents a strong argument in favor of the use of nickel steels such as 4620 for such carburized parts as shafts and pins.

Less Carbides Present—The reason for the excellent case toughness of 4620 can be accounted for by the lesser amount of carbide-forming elements in the steel.

The resultant homogeneous tempered martensite presents a tough shock resistant surface which provides durability and longer life for machine components.

The use of 4620 carburizing steel allows a certain amount of freedom in furnace operating procedures. This steel is fairly insensitive to such conditions as carbon potential of the furnace atmospheres; size, shape, and distribution of the load; and carburizing and diffusion cycles.

Takes Wide Carbon Range—It is not necessary, for example, to calculate the surface area of the load and adjust the carbon potential and furnace cycles accordingly. Precise control of the carbon potential is not nearly so necessary as with other steels by virtue of the excellent properties obtained in the case with a fairly wide range of carbon.

This allows the small or jobbing producer to load his carburizing furnaces more or less as production demands with little necessity for close control of the furnace conditions and load.

### Forges Nose Cones in One Pass

#### Large press forms 5-ft diam Atlas nose cones from copper

Here's an example of how fabricators are meeting the challenge of advanced missile designs.

■ Research efforts for the missile program are continuing to pay off. One of the most recent developments comes from North Grafton, Mass. The Wyman-Gordon—U.S.-A.F. plant there is now producing what it claims to be the largest copper closed-die forgings ever made.

The forgings, more than 5 ft in diameter, 2 ft deep and 1½ in. thick and weighing nearly 1 ton, are used as nose cones for the Air Force Atlas ICBM and IRBM missiles.

These cones which carry the warhead, control equipment and arming fusing devices have already been successfully flight-tested.

In One Pass—Wyman-Gordon is forging the copper nose cone in one pass on a hydraulically closed-die forging press which can exert up to 50,000 tons squeezing power.

Considered an impossibility less than eight months ago, these copper nose cones are today a regular production item at North Grafton.

The copper used in the forging has a minimum copper content of 99.9 pct with a maximum oxygen content of 0.05 pct. It is furnished in 9000-lb billets cast in water-cooled molds.

Eliminate Defects—The copper billets are first sawed to desired length; casting defects are removed with the aid of a turret lathe. The lengths are then heated and given preliminary forming operations in an 18,000-ton closed-die forging press. A band saw disposes of excess flash and any defects found are again removed.

Ultrasonic inspection of the shape is then made to determine internal

qualities of the partially worked metal. After reheating, the shape is ready for finished die work.

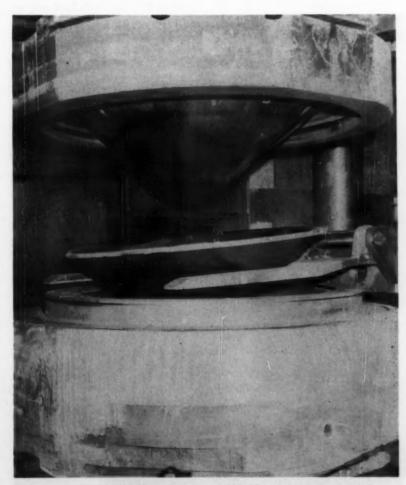
The heating cycles were developed after extensive testing of sample material against various heating times and temperatures. In production, these cycles are closely controlled so that internal soundness and very fine grain size requirements are attained in the final part.

Gets Final Forming—The final shape prior to machining is given the nose cone by the gigantic 50,-

000-ton closed-die forging press. The size of this press might be better appreciated when one considers that the pair of dies weighs 70 tons.

After the flash is removed, the shaped copper nose cone receives dimensional checks and a sample of the material is laboratory tested.

Before the cone is ready for packing and shipping, it is once again subjected to immersion ultrasonic inspection. Specifications are so high that porosity as slight as 1/32-in. diam is cause for rejection in critical areas.



**REMOVE FROM PRESS:** A copper closed-die forging is removed from a 50,000 ton press. Claimed to be the largest ever produced, this forging will be used as a nose cone for the Air Force ICBM and IRBM missiles.

# Will New Iron-Making Methods Cut Blast Furnace Operations?

Recent activity indicates that direct reduction and other new methods of making iron are very much on the scene.

The question is: When and where will it pay to use them?

By G. J. McManus, Pittsburgh Regional Editor

• Some of the magic has worn off. However, direct reduction and other new iron-making processes are still pushing hard for a place in the American steelmaking scheme. There has never been much question that it was technically possible to make iron in a great variety of ways; the earliest ore refining systems employed a crude form of direct reduction.

Major steel companies are running research and development programs. Equipment companies are making studies and staging demonstrations. Iron is being made in fluid beds, shaft furnaces, electric furnaces, kilns, and retorts. In this country and Europe, at least thirty iron-making processes have entered or passed the pilot stage.

One commercial plant has been

completed in this country. A 110-ton installation is due for the West Coast. A 500-ton plant is coming up in Mexico. Two Canadian projects are in the works.

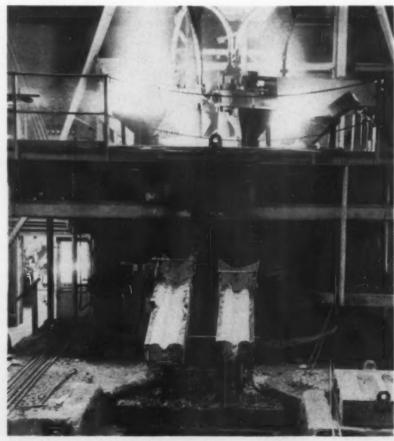
Facts Are Evident — From the jumble of activity, steel men see these facts emerging. First, technical soundness of major new processes has been established. Second, under special conditions, direct reduction and other new methods are ready for profitable commercial application in this country. Third, the new processes are not ready to displace the blast furnace as the basic iron source for integrated American mills.

The big question for this country has been: when and where will it pay to use the new methods? A review of some of the recently completed jobs, and plans for new installations will point out the conditions that must be considered.

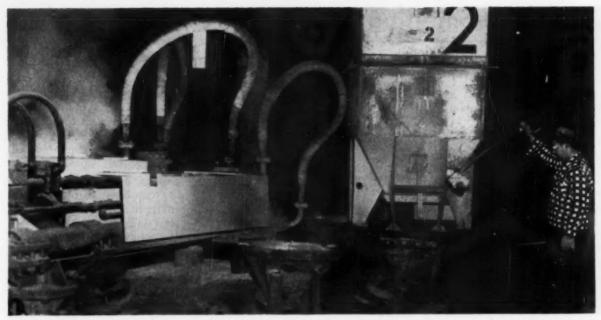
Quebec South Shore Iron and Steel Co. is interested in a 300-tonper-day Strategic-Udy plant (Stratmat-Koppers) for a projected steel mill.

Use Any Coal—The Strategic-Udy process employs a rotary kiln for pre-reduction and an electric furnace for final smelting. Power is an important cost factor for the process. But coal quality is not. Almost any form of carbon can be used as the pre-heating and pre-reducing agent. Thus, a certain site in east Canada where power is cheap and metallurgical coal is scarce is being considered.

M. W. Kellogg is building a 500 ton per day reduction plant for Hojalata y Lamina (HyL) in Mexico. The fact that the plant area has no coal is no problem. The HyL process uses gas as the reductant



SEPARATE TAPS: Strategic\*Udy prototype plant uses a 1000-kva electric furnace. Slag tap is on the left; metal tap is on the right.



FEED SINTER: The hot sinter from the kiln is fed through hoppers into the reaction zone of the furnace.

and the area is rich in these other fuel sources.

Armco Steel Corp. is considering a 250-500 ton plant of the fluid bed type for direct reduction use at its Houston plant. Armco has a blast furnace at Houston but is handicapped by a lack of suitable coal. Scrap supply is always a potential problem also.

Energy Is Available — On the other hand, the energy forms required by direct reduction are available in Houston. Armo feels the new process could provide an alternate to scrap and keep price pressure from reaching an extreme point.

Bethlehem Steel is saying little about the economics of the 110-ton H-Iron plant being built at its Los Angeles works (Hydrocarbon Research, Inc., is process co-sponsor). However, Los Angeles is an electric furnace shop, dependent on scrap in an area that is vulnerable to export price competition.

Among the various iron making methods, there are those suited for virtually any type of ore. For example, at Birmingham, high phosphorous ores are a special consideration for Republic Steel Corp. and National Lead Co. in the operation of their 175 ton R-N plant.

Pros and Cons—Conditions favorable to the new processes were summed up by United States Steel last month. Speaking about its own fluid bed method, U. S. Steel offered these thoughts:

"The Nu-Iron process would become economically sound for U. S. Steel if we did not have the proper coal for metallurgical coke . . . if a plant were to be built in an area where scrap was scarce and if a cheap source of heat was available."

However, good coal is available in large parts of the country. U. S. Steel, therefore, does not see the new method as economically attractive on a wide scale at this time—unless, there is a breakthrough in hydrogen production. In addition, normal scrap and power

#### How Iron Is Being Made

1.	Smelting	Shaft Furnaces	Conventional blast furnace; low shaf furnace (Demag-Humbolt)***
		Electric Furnaces	Tysland Hole*; Lubatti*; deSy Ghent***
		Electric Furnaces with Pre-reduction	Strategic-Udy***;Orcarb***; Dwight Lloyd-McWane***
		Rotary kiln	Basset*
II.	Flash Smelting		Flame Smelting (Cyclosteel)***; Je Smelting***; Diamend Alkali
III.	Direct Reduction (gas reducant)	Shaft Furnace	Wiberg-Soderfors; Lurgi Galluser**
		Retort	Madaras***; Hyl*
		Fluid bed	Easo Little***; Nu-Iron***; Armo H-Iron***; Stelling***; Magriga
IV.	Direct Reduction (solid reducant)		Tunnel kiln (Hoganas-Sieurin)*; Krupp-Renn; Bureau of Mines R-N**; Bruckner*; Urquehart**
	* Commercial.	** Sami V	Verks. *** Pilet.

#### Compare Smelting Processes

Class	Process Name	Principals	Description and Status
Shaft Furnaces	Conventional Blast Furnace		
	Demag-Humbolt		Low shaft furnace employs briquettes that include fuel ore and limestone. Pilo plant 10-15 tpd has been run new plant due with capacity of 100 tpd.
Electric Furnace	Tysland Hole	Elektro- kemisk	Conventional electric smelting employs lump ore and electric arc; 100 furnaces in opera- tion; 3-4 million tons capacity.
	Lubatti	Demag	Employs electric current through slag; commercial, but not in wide use.
	deSy Ghent	U. of Ghent	Electric furnace with two com- partments; pilot plant built
Electric Furnace with pre-reduction	Elkem (with pre-reduction kiln)	Elektro- kemisk	Submerged arc furnace; pre- reduces and pre-heats ore in kiln.
	Strategic-Udy	Stratmat- Koppers	Electric resistance and arc heating system; uses kiln for pre- reduction and pre-heating 1000 kw semi-works plant is operation; letters of intent for two plants. One letter cover: 300 tons/day plant for Quebes South Shore Iron & Steel Co
	Orcarb	Swindell- Dresaler	Employs balls of fine ore and coking coal. This is heated pre-reduced and passes through electric furnace. Pilo plant at Harmarville, Pa.
	Dwight-Lloyd- McWane	McDowell Co.	Pellets of fine coal and ore are passed into sintering machine product goes in electric fur nace.
Rotary Kiln	Basset	F. L. Smith Co.	Make liquid iron in kiln; com mercial plants in Europe; a old process.

#### Reduce at High Temperatures

Process Name	Principals	Description and Status
Flame Smelting (Cyclosteel)	British Iron & Research Assn.	Pilot plant; makes iron, not steel.
Jet Smelting	Ontario Research	Natural gas and powdered ore mingled to produce iron; early pilot stage.
Diamond Alkali	Diamond Alkali Co.	Gas reactor for desulphurization of pig iron has been mentioned for possible application to iron making.

situations do not add up to an economic balance favoring direct reduction.

in

Blast Furnace Has Edge—The blast furnace has two strong arguments going for it. First, it uses coal as a basic ingredient and coal is the most abundant energy source in this country. Most of the other processes use electric power in addition to coal.

Second, the blast furnace has a 600 year head start over other methods and it is still moving. In 1948, American steel mills were averaging 1908 lb of coke per ton of iron produced. By 1957, the coking rate was down to 1658 lb per ton of iron. Last year, it was just under 1600 lb.

These average figures don't reflect the full impact on blast furnaces of new beneficiation and operating techniques. Some of the best furnaces are now going under 1200 lb of coke per ton of iron.

This progress is compared to direct reduction by David L. Mc-Bride, U. S. Steel's director of metallurgical process development and applied research. Calling the blast furnace a moving target, he offers this evaluation:

"We have a process that's competitive with the blast furnace of five years ago. But we can't match the current blast furnace model."

New Units to Give Answers—Dr. McBride expects further refinements in direct reduction processes. U. S. Steel is refining its original unit at Chicago. Other larger units planned for this continent will answer questions on how the new processes will handle volume operation.

But blast furnaces also figure to improve. Steelmakers expect the progress rate of the past five years to be equalled in the next five. To pull even, then, the new processes will have to make ten years' headway in five years time.

This could happen. If the cost of hydrogen were cut in half, says Dr. McBride, fluid bed reduction could become competitive overnight.

However, steel mills are not counting on such a breakthrough.

Current thinking was underlined a few months ago when Jones and Laughlin announced it was building a new blast furnace and adding coke ovens in a program to increase the iron supply of its Cleveland works.

Compare Other Aspects—What are some of the other aspects of steelmaking whereby new process and blast furnace operations could be compared?

Scrap percentage: new operating techniques are reported to permit a much higher percentage of scrap. But current practice, both for openhearths and oxygen vessels, calls for a high percentage of hot metal. Thus, the trend is in the favor of the blast furnace.

Volume operation: backers of the new processes concede that blast furnaces are more efficient, at this time, for sustained tonnage needs under standard conditions.

But for a daily requirement of less than 500 or 700 tons, they feel the new methods may be the answer. Foundries and other iron users, outside basic steel have shown interest on this basis.

A Tonnage Operation — One steelmaker questions this line of reasoning. He feels that iron production is inherently a tonnage operation by any method. And small scale operation cannot be economically attractive.

Capital costs: relatively low capital costs have been cited as a big selling factor for direct reduction over the blast furnace. It has been estimated that a reduction plant can be built for half the cost of a blast furnace.

A general comparison is hard to make. Blast furnace costs range anywhere from \$35 to \$50 an annual ton, depending on size and extra equipment needed. One steel-maker feels—and this is debated—that there may be no significant capital saving with direct reduction if the full cost of power and hydrogen equipment is included for the reduction plant.

#### Gas Reductants Do the Job

Class	Process Name	Principals	Description and Status
Shaft Furnace	Wiberg- Soderfors	Stora-Kopparberg	Coke or natural gas used as reduc- ing agent; carbon fully oxidized to give high fuel efficiency.
	Shaft Furnace	Lurgi Galluser	Pilot plant; no details.
Retort	Madaras	Madaras	Lump ore or pellets reduced by gas; pilot stage.
	HyL (Hojalata y Lamina)	M. W. Kellogg	Lump or agglomerated ore with reducing gas; 200 ton unit now operating; 500 ton plant coming.
Fluid bed	Esso Little	Esso Development Co., A. D. Little Co., Texas Co.	Pilot plant.
	Nu-Iron	U. S. Steel	Original 2 ton capacity pilot plant being refined.
	H-Iron	Hydrocarbon Research, Inc., Bethlehem Steel	Pilot plant built; second plant being built at Los Angeles with a capacity of 110 tons a day.
	Stelling	Stora-Kopparberg	Pilot plant.

#### Use Solid Reductants Here

(solid reducant—soli	d product)	
Process Name	Principals	Description and Status
Tunnel kiln	Hoganas Sieurin	Ore and coke heated in tunnel kiln; process long used in Sweden to produce high grade powdered iron. One plant in Riverton, N. J.
Krupp-Renn	Fried Krupp Southwestern Engineering Co.	Kiln used to produce partially fused iron shot; applied to special ores. Thirty- five kilns have been built; many now inoperative.
Bureau of Mines	U. S. Bureau of Mines	Rotary kiln used to reduce coal, ore and limestone; semi-works plant was built Project not active.
R-N	Republic Steel Corp., National Lead Co.	Kiln used to reduce ore and produce briquettes; can handle high phos- phorous ores or high grade ores. Plant near Birmingham has capacity of 50 to 75 tons a day.
Bruckner	Kennecott Copper	Horizontal rotary kiln used to make sponge iron in connection with copper recovery; commercial.
Urquehart Others: Freeman; Kalling	Steel Processing Co. (Fort Pitt Bridge Co.)	Ore fines and carbon changed into in- clined rotating tube; iron balls up after reduction; small test furnace.



KING-SIZE CUPOLA: An inspector examines the carbon well-zone lining prior to operation. This giant

cupola has helped increase production at Acme Steel's new plant by some 450,000 ingot tons.

### Carbon Blocks Help Spur Output In Two Giant-Size Cupolas

The pressure's on for boosts in steel production. In cupolas, it means bigger and better linings.

• Greater steel output is the prime goal of every mill. But, to meet this peak, they must invest in new, more modern sites. They must buy the most productive capital equipment. And they must study every possible area that shows promise of increasing production. No stones unturned!

Such planning on the part of Acme Steel Co. means 450,000 more ingot tons of productive capacity in its new \$33 million Riverdale, Ill. plant. Two of the largest cupolas ever built are part of the picture. Run in tandem, both con-

tinuous hot-blast cupolas operate with oxygen converters.

Biggest Blocks Too — Whiting Corp., Harvey, Ill., built these cupolas for Acme Steel. Featured in each one is a well-zone lining of the largest carbon blocks ever made for this purpose. Supplied by National Carbon Co., Div. of Union Carbide Corp., New York, blocks for the bottom course are nearly 3 ft high.

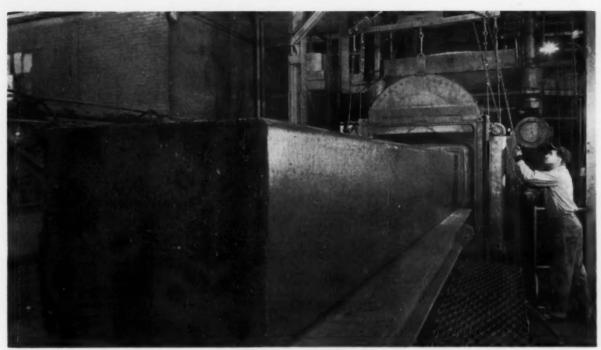
Production of these big carbon blocks starts with the extrusion of a 7600-lb carbon column at National Carbon's Niagara Falls, N. Y. plant. But before the blocks can be sawed to exact end-use size, they're baked for several weeks in a gasfired furnace.

Teeth of Diamonds—What saw cuts the carbon? A diamond-tooth unit does the finished machining. Its 76-in. diam blade rotates at about 750 rpm. And it can handle 110 specially-designed teeth tipped with diamonds.

In the new setup, each lining consists of 88 carbon blocks, with the largest ones almost 3 ft high and 20 in. square at the base.

Produce Many Steels — These giant cupolas are now supplying molten iron to the oxygen converters to make a wide range of steels in varying size batches. Inside diameters at the base plate are 11 ft.

Also, each one handles a 40-ft column of raw materials. Compare that figure with the 25-ft columns you can squeeze into cupolas!



INTO THE FURNACE: Next stop for this huge 24 x 30 x 184-in. carbon section is a gas-fired furnace. After

baking for several weeks, the 7600-lb piece will be ready for sawing to exact size.



**DIAMOND-TOOTH SAW:** Operator positions three carbon blocks for final cut, to put on the back taper.



ASSEMBLES LINING: Blocks are ready for temporary sub-assembly. Each lining consists of 88 blocks.

### **Broach More Holes in Less Time**

#### New Turret-Type Vertical Unit Speeds Output

It's hard to beat a vertical broaching machine that's both accurate and versatile.

And this one's designed with a turret application.

• A report from the Lone Star state tells how one company now saves more than 97 pct in machining time. It's a simple formula. Just get yourself a vertical broaching machine, like the one Cameron Iron Works has in its Houston shop.

What makes it so unusual? Basically, two major improvements. The pull-down unit's built with a turret application. And, in addition, the machine's designed with a dead-center pull on the broach.

Broaches Valves—How does this affect the broaching of oil-field gate valves? Where it used to take the old machine 78 hours to complete one valve, the new setup does the same job in just two hours.

Or, to get down to brass tacks, Cameron can now wrap up 39 valves in the same time it used to take to complete one valve.

The new machine, made by Lapointe Machine Tool Co., Hudson, Mass., has a 60-ton normal pull and 78-in. stroke. It can exert an intermittent peak pull of 85 tons.

Big Unit—Other features of the 36-ft high broaching unit include coolant system and motorized coolant pump; auxiliary hydraulic system for fixture operation; automatic pressure lubricating system; and push-button controls.

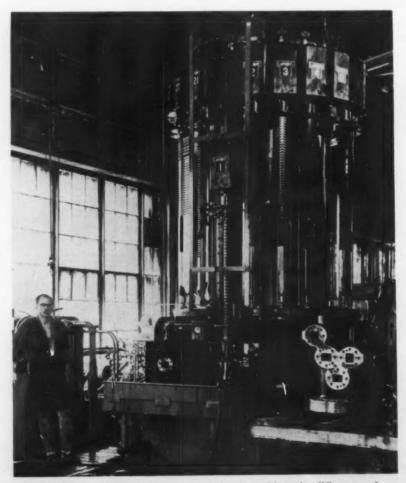
The broach's dead-center pull results in a smooth pulling power and accounts for the fine finishes on the work. The improved pull eliminates the stresses and strains you get with off-center pulling.

The unit's turret is 6 ft in diam, and includes 21 stations for storing the 80-in. long broaches. Since station No. 21 is an open station for any type of broach, the machine can be used conventionally whenever needed.

Take Your Pick—The operator can run the turret manually from the control station or automatically by presetting the variable-speed hydraulic motor drive.

The forgings that Cameron's working on are either 410 stainless or 4132 alloy steels. On a medium-size valve, the machine removes 35 lb or 108 cu in. of stock. Broached openings range from 23/8 x 23/4 in. up to 3 x 73/4 in., while length of cut varies from 7 up to 121/4 in.

The machine operates under any load condition up to 60 tons with a smooth, steady stroke. Despite its power, the broaching unit can produce finishes as fine as 20 to 25 microinches.



**SPEEDS BROACHING:** Programmed for broaching six different valves, this turret-type machine can finish all the holes in 90 minutes. Cutting speeds up to 25 fpm are possible, as are 6 fpm finishing speeds.



#### NEW VICTOR MOLY® HIGH SPEED HOLE SAWS

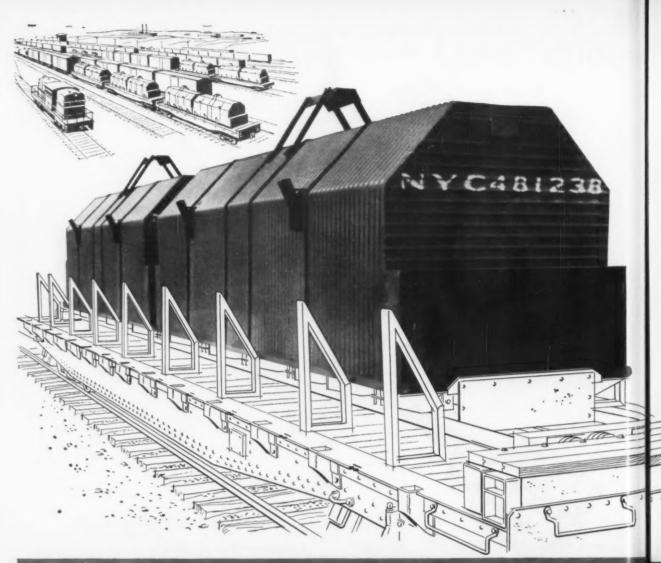
### ... cut clean, accurate holes in any machinable metal or plastic

Safe, shatterproof hole saws are now a part of the outstanding line of Victor metal cutting tools. Ruggedly built of the toughest high speed steels, these new Victor saws cut clean, accurate holes in any machinable metal or plastic. They can be used on a variety of power tools—lathes, drill presses, radial drills and portable power tools—to cut holes from 9/16" to 6" diameter, up to 1½" thick.

These fast cutting, durable hole saws – newest addition to the outstanding Victor line of power hack saw and band saw blades – are built to deliver better performance – and profit – in your operation. Why not prove it to yourself? Just drop us a note and we'll send full details promptly.



SAW WORKS, INC., Middletown, N. Y., U.S.A.
Warehouses in Chicage \* Portland, Ore. \* Houston
Makers of Hand & Power Hack Saw Blades,
Frames, Metal & Wood Cutting Band Saw Blades





REPUBLIC METAL® LUMBER is the answer to erecting fast, economical, framing assemblies. It is as easy to use as common lumber. Yet, stronger . . . because it is heavy gage steel. METAL LUMBER is engineered with a scientifically designed pattern of slots arranged on  $\frac{34}{\pi}$  centers. Even complicated framing problems are easy because this unique system of short longitudinal and transverse slots make possible an unlimited number of straight and angular combinations. Write today.



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REPUBLIC MATERIALS HANDLING EQUIPMENT helps you save time in stack, store, ship operations. They speed materials handling and reduce storage area requirements. Stacking does not damage boxes. Heavyduty stacking brackets and corrugated box construction deliver long, efficient service at lowest cost.

### Republic COIL COVERS

simplify handling ... protect cargo in transit

Republic Hood Type Coil Covers speed freight handling, protect cargos in transit, stop vandalism.

Designed for use on standard gondola and flat cars, Republic Coil Covers are approximately 22 feet long, 6 feet wide, and 6 feet high. Two covers are required for each

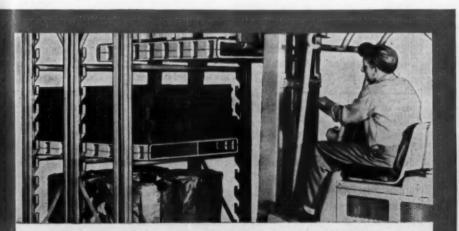
Republic Coil Covers are constructed of 13-gage sheets with 3/6" reinforcing members. Corrugated steel construction provides added strength, assures long service life at proximately 2,400 lbs. per cover.

Republic Covers are easily handled by overhead or track-side cranes. Six specially designed stacking brackets permit easy tiering during loading-unloading operations. Design of top grab permits easy handling with a "C" hook-no need for a man to be on the car to engage the lifting device.

Offer your customers the best possible protection. Ship with Republic Coil Covers.

lowest per-year cost. Weight: ap-

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SIMPLIFY PALLETIZING AND STACKING, save space with Republic Steel Pallet Racks. The savings of palletized handling now can be applied to bulky, uneven, odd-lot, and fragile materials. Republic, Steel Pallet Racks make palletizing practical. Tubular steel supports adjust every six inches to handle palletized material of any height. Select single pallets from any level without restacking. Two-way entry permits loading and unloading from either side. Write today for complete information. A Republic Materials Handling Engineer will be glad to offer you assistance in solving materials handling problems.

STATEMENT REQUIRED BY THE ACT OF AUGUST 24, 1912, AS AMENDED BY THE ACTS OF MARCH 3, 1923, AND JULY 2, 1946 (Title 39, United States Code, Section 233) SHOWING THE OWNERSHIP, MANAGEMENT AND CIRCULATION OF The IRON AGE, published weekly at Philadelphia, Pa., for October 1, 1959.

1. The names and addresses of the publisher, editor, and business managers are: Publisher, George T. Hook, Chestnut & 56th Sts., Philadelphia 39, Pa.; Editor, George F. Sullivan, Chestnut & 56th Sts., Philadelphia 39, Pa.; Managing editor, Eugene C. Beaudet, Chestnut & 56th Sts., Philadelphia 39, Pa.; and Business manager, None.

2. The owner is: Chilton Company, Chestnut & 56th Sts., Philadelphia 39, Pa.

Holders of more than 1 per cent of the capital stock outstanding of Chilton Company: Mary M. Acton, 260 Sycamore Avepany: Mary M. Acton, 260 Sycamore Avenue, Merion Station, Pa.; Mrs. Beulah Fahrendorf, Chateau LaFayette, Scaradale, New York; Dorothy S. Johnson, Route 1, Putnam Valley, New York; Kimberton Hills Farms, Inc., 1608 Walnut Street, Philadelphia, Pa.; Mabel P. Myrin, Walnut Street, Philadelphia, Pa.; Mary M. Acton Trustee II/W of Clarence A. Musselman, Deceased, c/o R. F. Irwin, Jr., 2318 Packard Bldg., Philadelphia 2, Pa., Beneficiaries: Mary M. Acton and David Acton: J. Howard Pew, 1608 Walnut Street, Philadelphia, Pa.; J. N. Pew, Jr., 1608 Walnut Street, Philadelphia, Pa.; Mary Ethel Pew, 1608 Walnut Street, Philadelphia, Pa.; Alberta C. Sly, 415 East Philadelphia, Pa.; Alberta C. Sly, 415 East 52nd Street, New York 22, New York; Alberta C. Sly, Executrix U/W of Fred-erick S. Sly, Deceased, 415 East 52nd Street, New York, New York, Benefici-aries: Albert C. Sly, Alberta C. Sly, and John E. Sly; Solell Farms, Inc., 1608 Walnut Street, Philadelphia, Pa.; Charlotte M. Terhune, 160 E. 48th Street, New York,

3. The known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: None.

4. Paragraphs 2 and 3 include, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting; also the statements in the two paragraphs show the affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner.

5. The average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the twelve months preceding the date shown above was: 28,411.

GEORGE T. HOOK, Publisher

Sworn to and subscribed before me this 15th day of September, 1959.

PHILIP J. SHIRE, JR.

(My commission expires January 7, 1963)



### You Arbitrate It!

#### WILBUR THE WIREWORKER

From the files of The American Arbitration Association

• Under the union contract at a wire and cable manufacturing plant, management had to give employees at least five days' notice before laying them off. In line with that provision, Wilbur D., a maintenance man, was properly laid off in August.

A few weeks later some repair work was needed. It looked like an eight-hour job. On Sept. 10, Per-

"You Arbitrate It!" appears in the second issue of The IRON AGE each month. Look for it in the November 12 issue.

sonnel sent a registered letter to Wilbur, directing him to report for the one day of work on Sept. 16. At the same time it gave him official notice that he would be laid off again at the end of his shift that day.

But the union objected. "You can't give a man notice of layoff while he's already laid off," the international representative argued. "When you call him back to work you have to give him at least five days."

"Not so," answered the personnel manager. "There is nothing in the contract to prevent what we're doing. If we couldn't call in the senior man from layoff for one day of work, when that's all we have, we'd have to get the repair job done by an outside contractor."

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The dispute couldn't be settled in grievance procedure. So it went to an arbitrator under the rules of the American Arbitration Assn. How would you rule?

#### The Arbitrator Ruled:

Reading the whole contract, the arbitrator noted that the definition of "employees" clearly included those on layoff. So he found no fault with the company for giving an employee notice of layoff before he was actually in a work status. Further, there was a four-hour call-in pay provision in the agreement which would have been meaningless if a call-in meant at least five days of work.

CAUTION: The award in this case is not necessarily an indication of how arbitrators might rule in apparently similar disputes. Each case is decided on the basis of the particular history, contract, testimony and other facts involved. Some of these essential details may have been omitted in condensing the original arbitration for brief presentation.



### New Catalogues and Bulletins

Money-saving products and services are described in the literature briefed here. For your copy just circle the number on the free postcard, p. 131.

#### **Speed Reducers**

Two booklets contain detailed engineering data on shaft-mounted, in-line, helical and right-anglehelical speed reducers. (Hewitt-Robins Inc.)

For free copy circle No. 1 on postcard, p. 131

#### Hardfacing Alloy

A new crankshaft metalspray powder is described in a data sheet. High in chromium and nickel, it contains chromium borides. Besides its anti-friction qualities, it possesses excellent oil-retention qualities. All standard bearings inserts may be used with crankshafts overlaid with this material. (Wall Colmonoy Corp.)

For free copy circle No. 2 on postcard, p. 131

#### Universal Grinder

An eight-page brochure presents design features, applications, specifications, and accessories of a universal internal grinding machine. A high-precision grinder for internal, external, and rotary surface grinding, it will grind straight or taper bores, outside diameters, flat, convex, or concave surfaces. Operating features enable a large variety

of work. Its capacity is 12 in, OD. (The Heald Machine Co.)

For free copy circle No. 3 on postcard, p. 131

#### **Belt Conveyors**

An illustrated product bulletin describes a new line of belt conveyors. Described are inclined and horizontal belt conveyors, and accessories, including a gravity wheel feeder and single noseover with safety release roller. Full specifications and capacities are included. (The E. W. Buschman Co.)

For free copy circle No. 4 on postcard, p. 131

#### **Telecontrol**

Telecontrol is a communication system that coordinates and controls in-plant supervision and production activities from a central location. A six-page folder explains it and shows how it can increase efficiency and cut costs. (Hancock Industries, Inc.)

For free copy circle No. 5 on postcard, p. 131

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#### **Straight-Side Presses**

An illustrated bulletin describes a redesigned line of 48 models of straight-side, single-action hydraulic presses with a range of 25 through 1000 tons. Constant-speed and variable-speed stroke arrangements are available. (K. R. Wilson, Inc.)
For free copy circle No. 6 on postcard, p. 131

#### Indicators, Controllers

A 10-page bulletin describes de millivoltmeter and bridge-type controllers, temperature scanner systems, and saturable reactor control systems for indication and control of temperature and other variables. Typical applications, principles of operation, and complete specifications are included. (General Electric Co.)

For free copy circle No. 7 on postcard, p. 131





#### **New All-Electric Hypressure Jenny!**

Anywhere that flame, fumes, or excess water are objectionable or hazardous, the new Model E-350 All-Electric Jenny® will solve the cleaning or sanitizing problem. And with the new Jenolizing Process, machinery, equipment, and parts are left with a coating that protects against flash rusting, and gives a glossy, likenew appearance to painted surfaces.

Model E-350 combines the right amounts of heat, pressure, and cleaning solution to handle the majority of cleaning jobs at savings of up to 80% in time and labor costs. Its compact size, portability, low water output, and quiet operation without flame, smoke, or fuel fumes, make it ideal for use practically anywhere in the plant.

Send the coupon today for complete information. You'll welcome the outstanding performance of E-350—and the attractive plan which permits you to prove to yourself the economies of this new All-Electric Jenny.



HOMESTEAD VALVE MANUFACTURING COMPANY Hypressure Jenny Division, P. O. Box 23, Coraopolis, Pa.

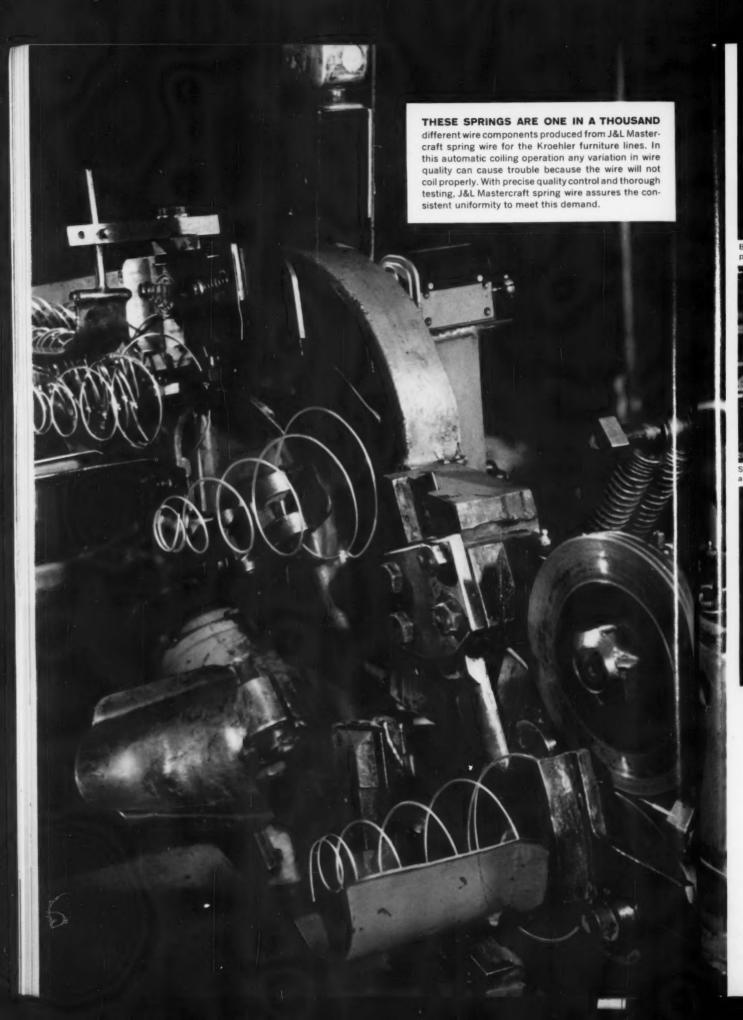


#### Perfect for

manufacturing plants, food processors, textile mills, chemical and pharmaceutical plants, metal working and fabricating, petroleum industry, canneries, hotels and institutions, and every other operation where fumes, smoke, excess water are objectionable.

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Bottom cross crimps for Kroehler davenports require a spring wire that will withstand severe punishment in crimping. At this Naperville plant, capacity is over 100 units of furniture an hour.



Custom-made Kroehler cushions require many components made from J&L wire.



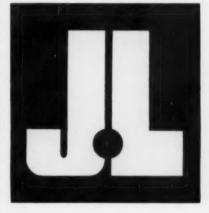
Spring wire cones, crimps, links and side wires are assembled on carefully fitted sofa frames.



Layers of rubberized sisal, burlap, cotton and top fabric are applied to seat frame assembly.



A skilled operator applies finishing touches to this Kroehler chair.





Over 400 separate items of furniture are produced for the Kroehler and Valentine Seaver lines by 17 plants in the U.S. and Canada. Helping to uphold the Kroehler reputation for fine furniture are the many spring wire components produced from J&L Mastercraft wire.

Report from the world's largest furniture maker...

### "We reduce rejects, machine downtime and waste with J&L Mastercraft spring wire" ... Kroehler Manufacturing Company

"We've never had to remove a J&L Mastercraft coil from a machine . . . never had to call in J&L to solve a wire deficiency problem.

"Our machine operators are sold on J&L wire. The uniform physical properties of Mastercraft spring wire result in more uniform production runs, with fewer machine adjustments. Also, J&L's special spring wire finish does not foul our machines. That means fewer shutdowns for equipment cleanup."

Similar facts are reported by many other automatic spring-making operators. Reduced rejects, increased production are achieved because every coil of Mastercraft, hard-drawn MB or Electromatic oil-tempered MB spring wire is quality controlled, completely tested.

Try this superior J&L product. It's tops in quality, competitive in price. Contact your nearest J&L district office, or write to Jones & Laughlin Steel Corporation, 3 Gateway Center, Pittsburgh 30, Pennsylvania.

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THE IRON AGE, October 8, 1959

#### FREE LITERATURE

Continued

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#### **Welding Shields**

Welding cups and nozzles made of a synthetic sapphire substance are non-oxidizing and will not decompose under high amperage or elevated temperature. They prevent weld contamination and provide high mechanical strength and long life. A complete line of these welding shields is described and specified in a four-page brochure. (Diamonite Products Mfg. Co.)

For free copy circle No. 21 on postcard

#### **Portable Air Tools**

"How To Choose And Use Portable Air Tools" is a 90-page handbook showing how to get more productivity from portable tools, and thus cut costs. Articles cover many aspects of the proper use, selection, and application of these tools. (Write on letterhead to The Rotor Tool Co., 26,300 Lakeland Blvd., Cleveland 32, O.)

#### **Quality Brazing Alloys**

A bulletin covers vacuum-tubegrade brazing alloys. They are highpurity, low-vapor-pressure sequential brazing alloys quality-controlled in manufacture to all but eliminate high - vapor - pressure impurities. (Handy & Harman)

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#### **Industrial Rectifiers**

Construction and design features of new heavy-duty and general-purpose 250-v dc rectifier lines are given in a bulletin. With sections assembled on three related bases for ready installation, the units rate

from 150 to 2000 kw. (Allis-Chalmers Mfg. Co.)

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#### Forgings and Stampings

A six-page folder describes procedures followed by a manufacturer of stampings and forgings for the heavy-construction industry. Illustrated are many types of forgings and deep-drawn stampings used by builders of heavy equipment. Services and facilities are explained. (Transue & Williams Steel Forging Corp.)

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#### Speed Recorders

Bulletins describe two different strip-chart recorders for use with process equipment. One indicates and records differential speed. The other indicates and records the ratio between two speeds. (General Electric Co.)

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#### Adjustable-Speed Drive

A six-page bulletin describes a line of mechanical adjustable-speed drives operating on ac power and offering speed ranges up to 8 to 1, available in ratings from 1 to 30 hp. The variable-pitch pulley principle is employed. (The Louis Allis Co.)

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#### **Heat-Treating Ovens**

A complete line of industrial heat-processing ovens, both batch type and semiautomatic continuous type, are described in a six-page bulletin. They operate in four temperature ranges from 650° to 1500°F maximum. (Hevi-Duty Electric Co.)

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#### **Speed Reducers**

A 20-page catalog covers a complete line of helical-gear speed reducers, and provides complete selection data on 20 reducer sizes in double, triple, and quadruple reductions. Selection information is Peatcard valid 8 weeks only. After that use own letterhead fully describing item wanted, 10/8/59

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#### FREE LITERATURE

also included on motor couplings and geared flexible couplings designed for use on this equipment. (Link-Belt Co.)

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#### **High-Temp Castings**

An analysis of the factors involved in selecting high-alloy heat-resistant castings for service temperatures over 1200°F is presented in a reprint of a magazine article. The 14 cast grades available for such use are considered. (Alloy Casting Institute)

For free copy circle No. 29 on postcard

#### **Rubber Parts**

A six-page catalog describes various types of molded and extruded rubber parts for use on automobiles, aircraft, machinery, appliances, office equipment, and railroad equipment. (The Garlock Packing Co.)

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#### **Coolant Separators**

A pamphlet describes the operation of a line of magnetic coolant separators in the cold-roll mill. (Barnes Drill Co.)

For free copy circle No. 31 on postcard

#### **Electric Clutches**

Detailed information on a complete line of electromagnetic clutches, in six series with torque capacities from 1.8 through 13,000 lb-ft, is furnished in a 20-page bulletin. These clutches provide instantaneous pushbutton or automatic programming control of shaft-driven machinery in a variety of fields. (I-T-E Circuit Breaker Co.)

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#### **Bronze Alloys**

A technical data sheet describes "Duronze" 708, an alloy for valve parts. It is one in a line of special alloys of aluminum silicon bronzecopper alloyed to aluminum and

silicon in varying degrees with arsenic sometimes added to improve corrosion resistance. (Bridgeport Brass Co.)

For free copy circle No. 38 on postcard

#### **Magnetic Motor Starter**

A complete line of magnetic motor starters is described in a catalog. Rated through 15 hp, 440 to 550 v, they incorporate many new control features. (Furnas Electric Co.)

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#### Miller Performance

A chart shows cutting standards for circular milling cutters when applied to various metals and plastics, and thus helps to determine cutter performance when planning tooling. (Morse Twist Drill and Machine Co.)

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#### **Automatic Control**

Systems for full-scale automatic control are described in a four-page bulletin. Services for designing new systems are described. (Consolidated Electrodynamics Corp.)

For free copy circle No. 36 on postcard

#### **Aluminum Tube**

A 48-page book presents a large amount of information on aluminum tube. It contains comprehensive information on the selection of proper tube alloys, temper designations for aluminum tube, and resistance of alloys to various chemicals. Complete details are given on the manufacturer's lines of various types of aluminum tube. (Revere Copper and Brass Inc.)

For free copy circle No. 37 on postcard

#### **Vulcanized Fiber**

A reprint is available of a fourpage article from The IRON AGE titled "How To Machine and Form Vulcanized Fiber Materials." It discusses shearing, sawing, drilling, threading, turning, shaving, broaching, sanding, and forming. (Continental-Diamond Fibre Corp.)

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THE IRON AGE, October 8, 1959

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NIAGAR

# Model 5-60 (5' x 60") .5 ... produce cylinders with work-saving ease and cost-cutting speed Model 10-120 (10' + 120"

Sleek, massive and low-built, these modern machines form commercially true cylinders with utmost speed and operating ease.

Adjustments for thickness and curvature are made quickly. A three-roll gear train keeps gears continually in mesh. Curving starts easily. Work in the rolls can be stopped instantly, reversed rapidly, or jogged in short increments . . . at the touch of a button. No drifting! Operation is quiet: Silent worm gear drive runs in a sealed bath of oil. Fully formed cylinders are easily removed via an air operated drop end. Performance is vibration-free; No foundations or floor bolting necessary.

Built in 5, 6, 7, 8, 9 or 10 in. diameters, Niagara Bending Rolls handle materials up to 14 ft. long and ½ in. thick. For complete information, request Bulletin 77.

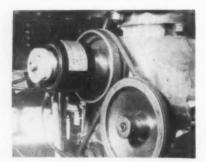
#### MAKE YOUR OWN COMPARISON

with these standard and special features

- Silent, totally enclosed worm gear drive
- Rugged, all-welded steel construction
- · Full length, emergency stop treadle
- Three-roll gear train speeds work, protects quality
- Air operated drop end for easy removal of cylinders
- · Quick, lower pinch roll adjustment
- Rear roll power adjusted, with indicators to duplicate settings
- Pinch type rolls minimize flat spots
- Longitudinal grooves permit one-pass forming of small diameters
- Pushbutton controls, conveniently located at operator's station
- High torque main drive motor with magnetic brake and reversing control
- Centralized pressure lubrication

NIAGARA MACHINE & TOOL WORKS • BUFFALO 11, N.Y. • District Offices and Distributors in principal U.S. cities and major foreign countries

### New Materials and Components

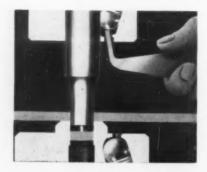


#### Collet Control for Light Duty on Grinders

A double-acting cylinder with 0.125-in. stroke is a collet control designed for light duty on grinders with a maximum of 8 times line pressure. Non-rotating with O-ring seals, the cylinder absorbs thrust load with two sealed bearings. Opening action is positive, and closing pressure is constant, and adjust-

able by a pressure regulator. Two models have ½-in. and 1-1/16-in. collet capacity, with respective sizes and weights of 2¾ x 3½ in., 3¾ lb; and 2¾ x 4 in., 4¼ lb. It attaches directly to the spindle for minimum runout. (Adams Equipment)

For more data circle No. 41 on postcard, p. 131

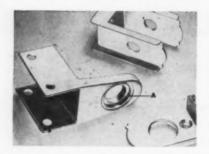


#### **Prevents Slug-Pulling in Production Punching**

A slug-shedding punch prevents the slug-pulling that often plagues high - production punching, especially when working thin materials. The end of a coil spring extends 3/64 in. beyond the punch point, compresses on down-stroke, and on up-stroke immediately pushes each slug away from the punch point.

These punches are available with round points from 1/16 to 5% in., in lengths from 2 to 3 in., and can be custom-made to special shapes. A ball-lock feature makes them easily and completely interchangeable. (Richard Bros. Punch Div., Allied Products Corp.)

For more data circle No. 42 on postcard, p. 131



#### **Cast Zinc Fittings Replace Brass Stampings**

Used as hardware with steel doors, the pictured fittings were formerly stamped from brass. Now diecast in a four-cavity unit die, they are produced in Zemak 3 zinc at lower cost, yet provide required strength plus good surface for chrome plating. Part "A" is pro-

vided with a raised lip to seat a nylon bushing, which is crimped in place, eliminating a previous assembly operation. For all castings shown, normal draft allowances on critical surfaces were reduced. (Monarch Aluminum Mfg. Co.)

For more data circle No. 43 on postcard, p. 131



#### Timing Head Gives Delay in Valve Function

A timing sequence head for valves of the same make cuts timers and relays from circuits requiring delayed valve function. It will time in, time out, or both time in and time out. Valve delay interval of 0 to 30 seconds is set, with repeata-

bility within 2 pct. Valve function is changed with an indicator plate. One type mounts on the valve body for remote control; the other, between pilot and valve body. (Valvair Corp.)

For more data circle No. 44 on postcard, p. 131

THE

#### the SAGINAW b/b SCREW helps

### Double Ditch Witch Sales in One Year!

"We've replaced an acme screw with a Saginaw Ball Bearing Screw to enable the digging boom of our Ditch Witch Trench Digging machine to be raised and lowered three times faster. It makes the operator's job twice as easy. And the Saginaw Screw saves us money both in first cost and greatly reduced maintenance. Since using the Saginaw Screw we've actually had to DOUBLE plant capacity to keep up with a two-fold increase in sales this year, and handle an expected increase of the same size next year!" says Howard Worthington, Sales Manager, Charles Machine Works, Inc., Perry, Oklahoma.

No wonder the Saginaw Screw adds a heap of extra Sales Appeal to the Ditch Witch! The Saginaw Ball Bearing Screw converts rotary motion into linear motion with over 90% efficiency. You, too, can save time, power, weight, space and cost by switching from outdated actuators to these versatile, always reliable Saginaw Screws.

Perhaps the Saginaw Screw can give your products that greater Sales Appeal you're looking for. Interested in details? Write or telephone Saginaw Steering Gear Division, General Motors Corporation, Saginaw, Michigan—world's largest producers of b/b screws and splines.

The Saginaw b/b Screw adjusts digging depth of the Ditch Witch Trencher three times faster and twice as easily.

Give your products NEW SALES APPEAL... switch to the

aginaw

WORLD'S MOST EFFICIENT ACTUATION DEVICE

Baring Crew



That single machine turning of curled-up steel shown above can be mighty troublesome and costly to your operations.

Gnarled up with thousands of others like itself, it becomes a problem in space...gallons of re-usable cutting oil are trapped in the folds...and the scrap value is greatly minimized.

Answer? Run this tangled waste through an efficient, AMERICAN METAL TURNINGS CRUSHER. Out come sized ships that are easy to handle for shoveling or pneumatic handling . . . easy to store (savings in space up to 75%) . . . easy to spin for oil recovery . . . and crushed turnings command a higher price.

The cost is easy, too, on your scrap recovery program. Pays for itself.

#### RECLAIM FUSED WELDING FLUX

American Hammermill reduces fused flux to fine regranulation for perfect re-use. Why throw away profits! Details on request.



American
PULVERIZER COMPANY
1439 MACKLIND AVE.

"Write for Metal Turnings Bulletin"

Despectors and Managerimers of Ring Courters and Paleonyry

SAINT LOUIS 10, MISSOURI

#### DESIGN DIGEST

#### **Buffer Oscillator**

An oscillating platform for polishing and buffing heads permits bolting on of the head, and affords more accurate smoothness than conventional spindle oscillation. Formerly, oscillation was obtained by oscillating the work spindle itself through the bearings—resulting in wear and tear on both spindle and bearings. Available for heads weighing up to 3000 lb, these platforms are ideal for use with any polishing head that has no oscillating feature. (Murray-Way Corp.)

For more data circle No. 45 on postcard, p. 131

#### **Jig, Fixture Shapes**

Standard cast-iron shapes for economical building of small jigs and fixtures include U's, T's, H's, hollow squares, rectangles, and flat plates. They are cast in sizes from 3 to 8 in. and lengths of 25 in., which are cut to order. Of high-tensile-strength cast iron with all outside surfaces machined square and parallel within 0.005 in. per ft, they give a rigid structure for drilling and milling jigs without welding and with a minimum of machining. (Ex-Cell-O Corp.)

For more data circle No. 46 on postcard, p. 131

#### **Low-Temp Phosphater**

A phosphating compound that operates at 95°F—about 85° lower than conventional phosphating processes—saves about 75 pct in steam, water, electricity, and down-time costs alone. It provides a phosphate coating as good as those of 180°F processes. It can be applied by immersion or spray washer. (Turco Products, Inc.)

For more data circle No. 47 on postcard, p. 131

#### New Tool Steel

Called "Tri-Tung," a high-carbon, high-chrome, air- and oil-hardening tool steel has great hardness, exceptionally good wear resistance, and minimum distortion with air hardening. It is useful wherever extreme accuracy of size and



UNILOY STAINLESS STEELS Treasured are the household items made of lustrous stainless steel. They shine with a wipe and keep their high quality appearance in everyday service... dishwasher detergents cannot mar their distinctive beauty. Markets for these items are ever-expanding, creating a brighter and brighter sales picture for manufacturers.

For Stainless Steel that provides ease of fabrication and fine finish—made to your exact specifications—specify Uniloy.

#### UNIVERSAL CYCLOPS STEEL CORPORATION

STAINLESS STEELS . TOOL STEELS . HIGH TEMPERATURE METALS

# ricati



#### NEW GREASE WITH EP PROPERTIES TAKES 700°F TEMPERATURES

In three years of field testing, a unique new grease called Thermatex EP 1 has:

-lubricated plain bearings operating at 700°F.

-regularly withstood steam pressures of 125 psi at 300-325°F for 20 hour periods.

-effectively lubricated equipment handling corrosive chemicals.

-resisted coking and solidifying in steam joints where temperatures reach 400°F.

#### Advantage lies in unique combination of properties

Users agree that the major benefit of Thermatex lies in its unique combination of extreme pressure properties with high heat resistance. While several greases now on the market have one property or the other, Thermatex is believed to be the first which effectively combines both.

#### Maintenance savings stressed

The use of Thermatex has already helped slash maintenance costs in a surprisingly wide number of applications. To indicate its potentialities -here's what happened when it was used in the steam joints of a paper drier machine: The previous grease used by a West Coast paper manufacturer would invariably solidify and coke in the last few feet of its supply line under the 400° heat. These failures occurred as often as every two weeks.

Three years ago, Texaco persuaded the manufacturer to give the experimental grease a trial. Since then, according to the user, no lubrication failures whatever have occurred, and no evidence of coking or plugging has been recorded.

#### Capabilities and limits

Information now available shows that Thermatex EP 1 will lubricate satisfactorily at 450-500°F when relubrication occurs every 3 or 4 days. It will provide adequate protection at 550°F with more frequent lubrication periods. Over this figure, the grease's useful lubricant life is measured in hours, but a centralized pressure system can still insure completely adequate lubrication.

For complete information and test results, check the coupon.

#### Oil mist lubrication gaining wide acceptance

Lubrication by means of an oil mist or fog is rapidly proving its advantages in many types of industrial machines. According to plant engineers, use of oil mist can provide a relatively inexpensive, truly centralized lubrication system.

#### How it works

In this type of system the oil is atomized into extremely fine particles-less than 2 microns in diameter. The resulting fog can be carried long distances through straight pipes and around bends without any appreciable condensation. The oil condenses only on fast moving parts -where it is needed. On slower moving parts reclassification fittings are used to produce either spray or droplets.

#### Advantages are significant

Proponents of oil mist lubrication cite a number of advantages the system has over conventional lubricating methods. They include the following:

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Use of oil mist eliminates the danger of drippage which might contaminate the material being processed. Points which are hard-to-getat or in dangerous locations can be lubricated from one convenient spot.

Positive air pressure in the system tends to check the entrance of contaminants such as water, dirt and abrasives-while the air itself provides some cooling effect.

#### Choice of oil is important

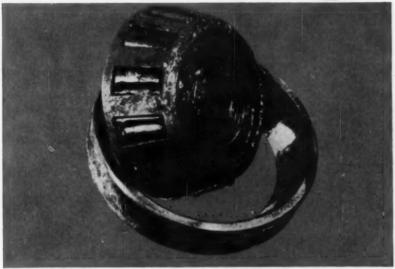
Experts offer a word of caution when it comes to selection of the oil. To be avoided are oils containing graphite, latex, insoluble soaps, fillers or other solids. Best choice seems to be an oil with viscosity at 100°F. (SU) of not over 1,000 seconds.

Check coupon at right.

Texaco products tested and recommended for oil mist applications include Regal Oil PC R&O, Regal Oil C R&O and Meropa Lubricant 1. Test results for these and other recommended Texaco oils are available.

### news





The difference between Fe<sub>2</sub>O<sub>3</sub> and Fe<sub>2</sub>O<sub>3</sub>H<sub>2</sub>O exonerated the lubricant in this bearing failure.

### Deposit analysis can uncover surprising reasons for failure

When equipment fails, industry's natural tendency is to blame the lubricant. For this reason, samples of oils and greases—often no more than mere specks—sections of failed gears, bearings, and other ruined pieces of equipment are analyzed at the Texaco Research Center, Beacon, N. Y. Here they are subjected to a searching analysis by technical service experts using a tremendous variety of apparatus and procedures.

#### Lubricant is seldom guilty

Of the numerous samples submitted every year, the lubricant is guilty in less than 1% of the cases. Take a typical example:

A customer submitted the roller bearing illustrated above. The bearing and its lubricant were liberally contaminated with both red and black material. X-ray diffraction analysis disclosed that the contaminant was an alpha ferric oxide which is characteristic of fretting corrosion—usually correctable only by a design change. Had ordinary rusting occurred the contaminant would have been hydrated ferric oxide—and a finger could have been pointed at the lubricant for allowing water to come in contact with the bearing.

The March, 1958, issue of Lubrication Magazine contains a fascinating series of these "detective" stories. Write for your copy; the supply is limited.



#### Explains Significance of Lube Tests

The October issue of Lubrication Magazine is designed to give the lubricant user new insight into the significance of lubricant tests. The article demonstrates how the tests—which determine some lubricant properties—can help the lubrication engineer in selection of lubricants for specific equipment. Check the coupon for your free copy.

#### **NEW PRODUCT NEWS**



Chemical grinding coolant leaves no oily film—keeps machines cleaner. Helps prevent heat check, permits the use of a finer grit wheel—Cooltex.

## Selection of cutting or grinding fluids can be critical production problem

Which is best—a straight cutting oil, a soluble oil emulsion, or a chemical coolant? Picking the right type is often a difficult problem, yet the correct choice can often yield major production savings, according to Texaco's chief Metalworking Engineer.

#### Multitude of factors complicate job

It is pointed out that there is no "best" type of fluid—it all depends on the type of operation. Some cutting jobs, for example, can get by with just a coolant, others—such as automatic screw machines—need a fluid that can lubricate as well as cool, because of inevitable leakage between sumps. Physical properties of the work, high heat—even hard water—can also affect the choice.

#### Grinding: New chemical coolant adds to choice

Chemical coolants—like Texaco's Cooltex, for example, are comparative newcomers to the grinding operation. However, many operators can point to production boosts of over 200% by using Cooltex instead of an oil. But again it all depends on the particular problems of the operation.

#### Expert advice can save money

Also underlined is the fact that calling in an expert to discuss cutting oil requirements can pay off for a great many manufacturers. Texaco, for example, maintains a staff of Metalworking Lubricant Engineers from coast to coast, whose prime function is consultation on cutting oil problems.

Dear Sirs: Please send me more information on	Name
☐ Thermatex	Firm
☐ Cooltex	1
Recommendations for oil mist lubricants	Address
Please send the October issue of Lubrication Magazine	Zone State

#### DESIGN DIGEST

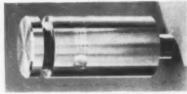
contour must be retained through long production runs. (The Uddeholm Co. of America)

For more data circle No. 48 on postcard, p. 131

#### **Liquid Spring**

Using liquid compressibility, a new model in a series of liquid springs produces 40,000-lb force on 1/4-in, stroke in a self-contained

package only 21/2 in. in diam and 5 in. long. An interior shockabsorber action can be added. It



has many uses, such as providing a yieldable member on overload applications in heavy press operations, or a yieldable force means for thermal expansion elements in atomic industries. It is also useful in compound dies. (Taylor Devices, Inc.) For more data circle No. 49 on postcard, p. 131 line

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#### Strong Filter Materials

Two new filtering materials offer a host of possible applications due to their exceptional tensile strength; resistance to heat and corrosives; and known, controlled, and stable porosity. The first, called Fiberfilm, is made of fine glass fibers formed into sheets 0.0006 to 0.018 in. thick and coated with Teflon. Pore sizes are controlled from 5 to 100 microns. It is designed for laboratory operations. The other, Amfab, is a strong woven glass fabric integrated with fine glass fibers and impregnated with Teflon. Porosity is controlled from 1 to 75 microns. Thickness ranges from 0.001 to 0.025 in. It is designed for use in large-scale industrial processes, for filtration where wet strength and resistance to bursting and to active chemicals are highly important. Another possible use would be in chimney installations. (American Machine & Foundry Co.)

For more data circle No. 50 on postcard, p. 131

#### Silver Brazing Flux

A new silver brazing flux boasts greater heat tolerance and outstanding coverage per pound of material. Smooth consistency for ease of application, and comparative freedom from crystals, add to its value, particularly in automatic or semiautomatic operations. Free samples for use in the 1100° to 1700°F range are available. (Write on letterhead to Special Chemicals Corp., 100 S. Water St., Ossining, N. Y.)

#### Core-Box Sealer

Sealing foundry core boxes with a tough seal of Hycar nitrile rubber forms an effective barrier against "blow-by" in foundry operations. The method reduces costs, and makes possible better cores which produce better castings with less scrap. Flexible enough to fit out-



lines of complicated box contact faces, the seals resist steam, chemicals, hydrocarbons, and mechanical deformation, and have unusual resistance to the abrasion of blown sand. (B. F. Goodrich Chemical Co.)

For more data circle No. 51 on postcard, p. 131

#### **Press Safety Device**

Safety of power-press operation can be increased with a two-hand press control. An electromagnetic two-hand pushbutton press control keeps both hands of the operator safely away from the stroke of the power press ram. The system can be set to operate a single-stroke or a continuous press. (Durant Tool Co.)

For more data circle No. 52 on postcard, p. 131

#### **Blind Fastener**

A new blind clinch-type fastener sleeve has been added to a line of honeycomb and sandwich panel fasteners. Installed in one side of a sandwich panel, it does not affect or disfigure the opposite panel cover sheet. On installation, a knurled end bites the inside of the drilled hole, and the pneumatic installing gun spreads prongs into the inside surface of the cover sheet, anchoring the fastener. Thus the fastener's internal thread provides a strong anchor point. (The Delron Co., Inc.)

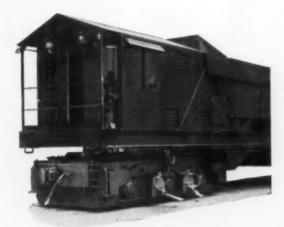
For more data circle No. 53 on postcard, p. 131

#### NEW BOOK

"Epoxy Resins: Market Survey and Users' Reference," the product of an extensive survey by a group of graduate students at the Harvard Business School, points out specific areas of application and gives examples of how epoxy resins have done a better job and/or saved money. It also analyzes the present market and predicts future market growth and future price. Growing applications in tooling, adhesives, and other uses are predicted. \$18.50 per copy. Materials Research, Box 363, Cambridge 39, Mass.



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100-TON BOTTOM DUMP ORE TRANSFER

Each car Atlas builds is engineered to specific task performance...and designed for personnel safety.



ATLAS

CAR & MFG. CO. 1100 IVANHOE ROAD, CLEVELAND 10, OHIO

## Which would you rather



American Steel & Wire supplies Heavyweight Coils—in weights up to 2,000 pounds—to any customer who can effectively apply their time, space-, and money-saving qualities. There is no price extra for this special coil.

When you order your wire in large 2,000-pound coils, you save three different ways:

You cut down on handling time and cost.

You have only one coil to move in place of 5 or more smaller ones.

You save on storage space. One 2,000-pound coil takes up less storage space than five 400-pound coils.

You save on costly, time-consuming down time. Your machines are shut down once instead of 5 or more times.



## American Manufacturers Wire

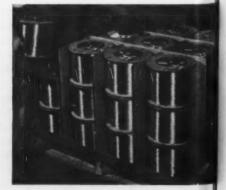
#### Other important time- and space-saving AS&W



UNITIZED COILS—
Several regular mill coils boundin one unit to speed up handling
and save storage space. Unitized
coils carry no price extra!

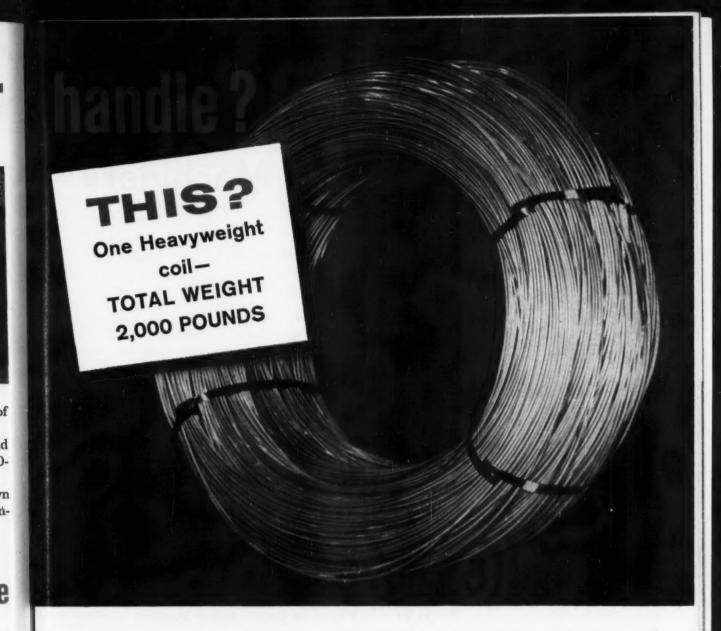


PAY-OFF DRUMS— Large, fibre, disposable drum containing long continuous coil. Pay-Off Drum is easy to handle and stack, protects wire finish from dirt and corrosive atmospheres.



DISPOSABLE SPOOLS
Contains from 5 to 65 pounds of fine
wire. These non-returnable spools are
convenient to handle and stack. Where
wire is needed in large quantities, they
can be shipped 36 spools on a pallet.

This shap platfe wire



#### **WIRE PACKAGES:**



PLATFORM COIL CARRIER This disposable unit is made of Ushaped wire frame attached to deck platform; holds up to 3,000 lbs. of wire in continuous lengths.

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All of these new American Steel & Wire Packages are planned to serve you better, to help you use warehouse space to better advantage, to save time and money.

For more information, get in touch with the nearest district office of American Steel & Wire. General Offices: American Steel & Wire, 614 Superior Avenue, N.W., Cleveland 13, Ohio.

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## New Equipment and Machinery

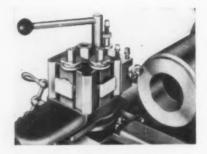


#### Portable Projector Allows Magnified Checking

A portable optical projector allows continuous precise magnified checking, direct measurement, and comparison of work contours to transparent overlay charts. Accessories include interchangeable magnifications of 10, 20, and 31.25X, a protractor screen, and mounting compounds for direct linear mea-

surement to 0.001 or 0.0001 in. It is easily changed from one machine to another, and setup is fast with universal or special adapters. Most used in forming of tools and precision contours, it improves control and cuts machining time and spoilage. (Stocker & Yale, Inc.)

For more data circle No. 61 on postcard, p. 131

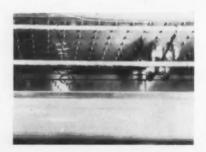


#### **Square Turret Features Quick-Change Tooling**

Designed to improve on standard square turrets, a quick-change multi-tool holder is easy to use and boasts high precision. For production or individual work, it has three stations which accommodate "exchange holders" to permit changing to fresh or different tools for grind-

ing or new operations. Adjustments are easily made. Accuracy of both tool resetting and indexing is guaranteed to 0.0001 in. It accommodates all standard tools and a wide range of boring bar sizes. (Karl A. Neise)

For more data circle No. 62 on postcard, p. 131



#### **Dries Plated Parts on Racks After Rinsing**

An open-top drier dries plated parts on racks after rinsing. A recirculating hot-air system prevents loss of heat or air through the top opening. Small nozzles on the side of the drying chamber direct streams of warm air on all parts for fast, efficient drying. A sliding damper

regulates the flow of secondary air. Available in steam- or gas-heated models, it can be designed to fit any job requirement, with size depending on size and number of racks and position of the work. (G. S. Blakeslee & Co.)

For more data circle No. 63 on postcard, p. 131

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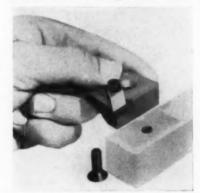
#### Terry-Cloth Work Gloves Shed Oil and Grease

Because they have been treated to prevent absorption of oil and grease, a new line of terry-cloth work gloves retain their light weight, flexibility, and positive grip during long service. Since they do not become slippery from oil, they always permit a good grip on the article or material handled. The thick pile of the fabric cushions the hands against sharp edges, and makes them particularly useful for handling metal sheets and strip. They are reversible for longer life. (Jomac Inc.)

For more data circle No. 64 on postcard, p. 131

#### **Throwaway Toolholder**

Now toolholders themselves are in the throwaway category, with introduction of a disposable toolholder end that saves the user as much as two-thirds as compared with conventional single-piece toolholders. If a turning tool is dam-



aged, only this disposable end is discarded. Especially designed for cast-iron work, it uses a chipbreaker clamp. These items come in all standard lead angles. They are investment-cast, hardened, with 0.003-in. tolerance. (Ends Co., Inc.) For more data circle No. 65 on postcard, p. 131

#### **Powered Wheelbarrow**

A small powered wheelbarrow has 3/4-ton capacity and the power to take a 20-pct incline fully loaded. Its 10-cu ft dump bucket is inter-



changeable with a flatbed platform, making the unit suitable for hauling every kind of material in the plant. (The Prime-Mover Co.)

For more data circle No. 66 on postcard, p. 131

#### Pistol-Grip Sealer

A 6-lb pneumatic sealer features a pistol grip that makes it easy to seal 34-in, steel strapping with one hand. Used with an air tensioner of the same make, it forms a strapping combination that is fast and easy to handle, and cuts waste motion. (Signode Steel Strapping Co.)

For more data circle No. 67 on postcard, p. 131

#### Wheel-Former

A new wheel-forming attachment is intended for use on toolroom surface grinders. Mounting permanently on the machine's spindle head, it is available for formtruing or re-truing, but stays out of the way where it will not interfere with form-grinding. To use this device, the operator traverses a tracer over the profile of a template, and the path of the tracer is transmitted to the truing diamonds. Work is accurate within a few tenths, and forming time is reduced. (Pratt & Whitney Co., Inc.)

For more data circle No. 68 on postcard, p. 131

#### Rack Cutters

Koepfer Rack Cutters (German) automatically and economically pro-



## HYDRAULIC EQUIPMENT

Lassman Trunnion Cylinders offer extra features unobtainable in the usual designs. Among these are hydraulically balanced swivel pipe connections which permit rigid installation of piping, eliminating hoses or other fittings and their incident troubles. This is particularly important when considering large cylinders or high pressures.

This style of cylinder is only one of many, all of which embody "extra" features of design and construction; features that, as a result of our long experience in building heavy-duty hydraulic equipment, mean trouble-free performance.

Phone HUnter 6-8600 or write for brochure BL-757.

PUMP UNITS . VALVES . CYLINDERS . COMPLETE HYDRAULIC SYSTEMS SPECIAL PURPOSE PRESSES . BALLAST TYPE ACCUMULATORS

Quality EQUIPMENT for Quality PERFORMANCE

BENJAMIN LASSMAN & SON ROUTE 8, GLENSHAW, PA

## **Faster Load Lifting**



#### 12 MODELS

lift full load 10 feet

500-pound hoist— 7 seconds

1000-pound hoist— 9 seconds 2000-pound hoist—24 seconds

Speed, accurate control, safety and long life are combined in the new Coffing Quik-Lift Air Hoist to give you efficient hoisting power.

Smooth power flow and absolute control at all speeds and loads is provided by the heavyduty, 8-blade rotary air motor, the air-cooled disc brake and sensitive controls.

This hoist will not drop its load if air pressure fails for the brake is always engaged except when the motor is activated. If air supply fails, load can be safely lowered manually by the brake adjustment screw. The aircooled, disc-type brake provides four times as much braking area as conventional brakes.

Free movement so that the push-button pendent control is always correctly positioned for easy use is provided by the swiveling features of the air supply hose and pendent hoses. Safety hooks, which are standard equipment on all models, swivel on roller thrust bearings.

The Coffing Quik-Lift Air Hoist is available in 500, 1000 and 2000-pound capacities—with either link or roller chain and with interchangeable manual pull-cord or pushbutton pendent controls. Ask your distributor or write for Bulletin ADH-79.

## **COFFING HOIST**

DUFF-NORTON COMPANY

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Ratchet \* Screw Hydraulic \* Worm Gear

#### NEW EQUIPMENT

duce racks for all types of office, tool, and scientific machinery. There are two models, with one or two cutting heads. Various cutting tools ne

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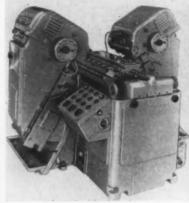
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are available—from a single, to a gang of annular form cutters. All parts of the cutting cycle are automatically controlled through a built-in selector panel. Maximum cutting length is 20 and 40 in., respectively, for the two models, and maximum cutting width is 4 in. (Cosa Corp.)

For more data circle No. 69 on postcard, p. 131

#### **Drum Handler**

A simple, inexpensive mechanical handler for fiber and steel drums can pick up every type of drum, in any condition. Two hardened jaws grip the bead of the rim. The heav-



ier the drum, the tighter the grip, and drums are released only when set down. This device can be used on a forklift truck or put over the lip of a shovel. (Little Giant Products, Inc.)

For more data circle No. 70 on postcard, p. 131

#### Chipbreaker Drill

Available in sizes of 3/4 in. up

THE IRON AGE, October 8, 1959

with straight or taper shanks, a newly designed line of drills break and control chips, reduce chip size, retain positive rake, penetrate



easily, save time and money, and have long life. They will outperform any regular drills altered to include conventional types of chipbreakers. (Chicago-Latrobe)

For more data circle No. 71 on postcard, p. 131

#### **Vibrating Feeder**

A heavy-duty vibrating feeder has a capacity up to 1000 tons per hour, and is ideal for feeding controlled tonnages from bins and hoppers to belt, crushers, pulverizers, kilns, grinding mills, scales and other processing equipment. It is equipped with a 60 x 90-in. deck and a renewable wear-resisting liner. (The Jeffrey Mfg. Co.)

For more data circle No. 72 on postcard, p. 131

#### **Hoist Lubricator**

A new system permits safer and faster lubrication of overhead hoists from the floor even while in operation. Dangerous ladder-climbing and work near open conductors are



eliminated. Tough nylon tubing carries lubricant from a pendant fitting to the trolley wheel bearings. It is easily and quickly installed. (Detroit Hoist and Machine Co.)

For more data circle No. 73 on postcard, p. 131

# ROLOCK FABRICATED MAN ALLOYS

RETORTS . BASKETS . SCREENS . GRIDS



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Rolock has so many successful pit-type furnace equipment installations . . . so many satisfied repeat customers . . . that we feel very confident in promising you equal satisfaction.

Furthermore, we make ALL the basic equipment needs for pit-type furnaces of every popular size and type... retorts, screens, grids, baskets, fixtures, or specially designed work carriers. In each you will find unique ROLOCK design and construction features that are PROVED life-lengtheners... performance-improvers... long-term cost-reducers.

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#### The Iron Age Summary

## Strike Impact to Last for Months

The outlook is gloomy for steel users and will stay that way for months after the strike's end.

Mill order books will be in a state of chaos and recovery will be slower than most believe.

■ An end to the steel strike cannot prevent a continued spreading of layoffs throughout steel-using industries.

Many more thousands of workers will be idled, even after the steel mills are working their way back to full production.

Industry Support — The steel supply crisis has been soft-pedaled by many consumers. This is because of their support of the steel industry's stand for a non-inflationary settlement.

But the gloomy fact is that supplies for the months ahead will be shorter than at any time in the postwar period. Getting some semblance of order in the flow of shipments will take months, not weeks. Production Goals—Mills are telling their customers it will take from three to five weeks before shipments of flat-rolled products are normal. But actual estimates run from seven to nine weeks.

Although mills are shooting for full production within three weeks after the strike, it will be many more weeks before shipments reach pre-strike levels. This interval depends on product, with cold-rolled sheet shipments the most critical.

Mill damage has been extensive. Order books are in a state of chaos. Much of the steel in the mills' own pipelines will have to be re-processed. User pipelines are also drained and what little steel remains is out of balance and is of little use until new shipments are in full flow.

Ore Now Critical—The ore situation is now critical. It has reached the point where some mills may not be able to produce at full capacity in late winter months.

The ore situation, always serious, has been hit hard by two new fac-

tors: The East and Gulf Coast dock strike cut delivery of imported ore which is counted on to ease the shortage. At Great Lakes ports, ore shippers fear that seamen on the idled ore fleet are scattered all over the country and it will take valuable time to assemble crews.

Out of Control—Mills admit it will be difficult to control shipments to ease the most critical needs first. More likely, they are apt to pick up schedules that were set before the strike. But user pressures, as has happened before, will be terriffic and will undoubtedly have an effect on post-strike shipments.

Furnace repairs, slow startup, shortages of ore and scrap, wide-spread confusion as mills reopen, all dictate a fourth quarter output far below earlier expectations. Furthermore, a rail car shortage is likely to hamper shipments.

What it adds up to is a period of nothing but trouble for steel users well into 1960. Not even an early settlement can prevent a severe steel famine now.

#### Steel Output, Operating Rates

Production (Net tons, 000 omitted)	This Week 368	Last Week 368	Month Ago 353	Year Ago 1,933	
Ingot Index					
(1947-1949=100)	22.9	22.9	22.0	120.3	
<b>Operating Rates</b>					
Chicago	5.0	5.0	5.0	85.5	
Pittsburgh	4.0	4.0	3.0	66.0	
Philadelphia	12.0	12.0	12.0	76.5	
Valley	10.0	10.0	10.0	54.0	
West	0.0	0.0	0.0	69.0	
Cleveland	0.0	0.0	0.0	74.0	
Detroit	26.0	26.0	24.0	75.0	
Buffalo	0.0	0.0	0.0	66.0	
South Ohio River	74.0	68.0*	70.0	73.0	
South	12.0	12.0	10.0	66.0	
Upper Ohio River	57.0	56.0*	47.0	83.0	
St. Louis	94.0	97.0*	77.0	83.0	
Aggregate	13.0	13.0	12.5	71.6	

\*Revised

#### Prices At a Glance

Cents per lb unless otherwise	noted)			
	This	Week	Month	Year
	Week	Ago	Ago	Ago
Composite price				
Finished Steel base	6.196	6.196	6.196	6.196
Pig Iron (gross ton)	\$66.41	\$66.41	\$66.41	\$66.49
Scrap No. 1 hvy				
(Gross ton)	\$43.50	\$43.17	\$41.17	\$42.83
No. 2 bundles	\$29.83	\$29.17	\$27.67	\$28.83
Nonferrous				
Aluminum ingot	26.80	26.80	26.80	26.80
Copper, electrolytic	30-31.5 3	0-31.5	30.00	26.50
Lead, St. Louis	12.80	12.80	12.80	11.80
Magnesium	36.00	36.00	36.00	36.00
Nickel, electrolytic	74.00	74.00	74.00	74.00
Tin, Straits, N. Y.	103.50	102.50	102.00	96.75
Zinc. E. St. Louis	12.00	12.00	11.00	10.50

## Hand Tools Are Having Big Year

Hand tool manufacturers are having one of their best sales years and expect more of the same.

Deliveries are good, prices are steady, and the steel strike hasn't affected production.

 A business boom, new products, and steady prices are reported by major manufacturers of industrial hand tools.

Skil Corp. says business this year is about 25 pct above 1958, a record year. And they are looking for even better sales in the future. The Black & Decker Manufacturing Co. says its business volume is up 18 to 20 pct. They, too, are expecting an even bigger increase in sales.

Price Line Holds—Black & Decker reports a price increase of less than 2 pct on some tool lines, but generally prices are holding steady. Skil may make some price changes around the first of the year, but as yet no definite changes are slated.

Thus far the steel strike has had little effect on the industry. Most manufacturers had supplies enough to carry them into late fall or early winter production. They foresee no shutdowns or cutbacks.

Some Difficulty—One small manufacturer of construction hand tools says he is having some difficulty in getting certain grades of steel, but generally he is still getting what he needs. Most concede, however, that if the strike continues much longer they will feel at least a small pinch.

All manufacturers say deliveries are holding strong. There are few backlogs and users are experiencing no unusual delays in having orders filled.

New Product - Skil has introduced a new electric two-speed Recipro saw. (See photo.) The company says the new tool does the work of keyhole, hand, and hack saws five to 10 faster than earlier methods. Powered by a motor developing up to one-half hp, the saw can cut through anything that can be sawed by hand. It has been designed for heating, air conditioning, sheet metal, plumbing and maintenance men, manufacturers, and metal fabricators. An auxiliary top handle makes it easy to use in awkward cutting positions.

Skil has also introduced a line of snap-lock tools. The new line includes snap-lock jig saws, orbital sanders, hedge trimmers and a 5-in. circular saw. The tools can be snapped on or off the power unit in three seconds, Skil says.

Heavy-Duty Vacuum—Black & Decker has put out a new heavy-duty vacuum cleaner. The new machine can be used for floor and wall cleaning, can be attached to poles where appropriate (service stations for car cleaning), and be carried on a man's back for shelf cleaning. It weighs only 30 lbs.

Another model of the same machine has been designed chiefly for industrial use. It includes the basic unit and accessories needed for industrial cleaning jobs. It has a 10 ft neoprene staticproof hose, 5-in. plastic nozzle, 6-in. plastic brush, hose swivel, crevice tool and hose hanger.

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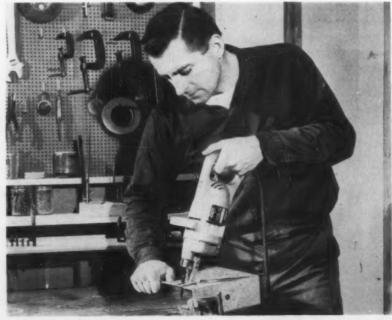
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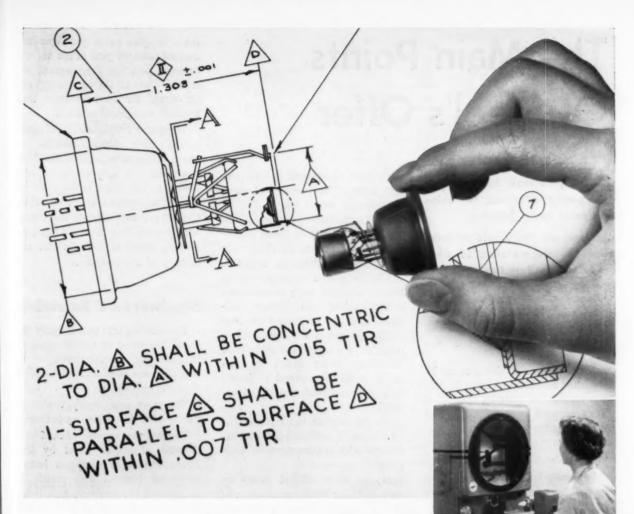
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Both Skil and Black & Decker are expecting to come out with new lines late this year or early in 1960. However, no information is available on the new tools at this time. Other, smaller tool manufacturers are also planning introducing new products.



**RECIPRO SAW:** Skil Corp. has introduced its new saw designed to do the work of the hand saw, jig saw, and hack saw in less time.



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## The Main Points Of Steel's Offer

The difference between the companies' offer and the union proposal spells inflation.

Here are the points at issue and an interpretation of what they mean.—Tom Campbell.

■ The steel companies made a specific, 15¢ per hour package offer providing for increased wages and benefits over a period of a two-year agreement.

They also scaled down to an irreducible minimum requests for improvements in contract language. They adhered only to points that would clearly operate in the longrange interests of the steel workers themselves.

Non-Inflationary—The offer was in line with the industry's efforts to reach a non-inflationary settlement providing more stable relations with the steel workers union, greater job and financial security for employees, and more flexibility in operating practices.

Specifically, the companies' offer was to (1) improve pension, insurance, and supplemental employment benefit programs in the first year of a two year agreement; and (2) increase wage rates at the beginning of the second year by amounts ranging from  $6\phi$  for the lowest job class to  $12\phi$  for the highest job class.

The total package would increase the industry's employment costs by 15¢ per hour or about 2 pct a year. (Total employment costs before the strike amounted to \$3.70 an hour.)

The Main Points—As part of this offer to increase wages and benefits, the company called on the union to join in working out mutually satisfactory amendments to try for

basic labor agreements in four general areas. The purpose of these amendments would be:

- (1) To continue payment of the 17¢ per hour cost of living adjustment, but eliminate provisions for future changes either up or down.
- (2) To enable management to take reasonable steps to eliminate featherbedding and improve efficiency, but also to protect and preserve the right of the employees to resort to grievance and arbitration procedure under which management would be required to justify fully the reasonableness of its actions.
- (3) To provide flexibility in the scheduling of work to conform reasonably with requirements of business.
- (4) To deter wildcat strikes by permitting the discharge of any employee engaging in such action and by clarifying responsibility of local unions in respect to wildcat strikes occurring within their jurisdiction.

Flexibility Needed—The offer of the two-year, 15¢ an hour package of approved benefits and wages was purposely stated in terms which would provide maximum flexibility in arriving at the distribution of this sum as between wages and benefits.

It was pointed out the companies were willing to consider alternate benefits should the immediate effect of the benefits of the take-home pay present problems that would preclude the arrival at a settlement of the strike.

Union Proposal—The companies stated that the union leaders' proposal would call for employment costs increases that could amount to 60¢ or more an hour over a 3 year period. The difference between

the 20¢ plus cents per hour increased costs per year of the union's proposal and the 7½¢ annual increased costs of the companies' offer would be sheer inflation and must be recognized as such.

The union's rejection of the companies' offer clearly reveals the union willingness to continue the deadlock. The companies are not willing to buy peace at the price of making agreements which will continue to promote inflation and which will prevent them from taking reasonable steps to improve the efficiency of the business.

#### Steelworkers' Rejection

The steelworkers unanimously rejected the offer of the companies. In summing up this offer, their language was considerably different than the companies.

The union analysis says the companies offer the following package:

The first year consists of the  $2\frac{1}{2}\phi$  increase in wages, offset by the  $2\frac{1}{2}\phi$  increase in employee insurance contributions. This results in no increase in take-home pay. It is, in fact, a reduction of their wages because of the abolition of the cost of living adjustment.

Improvements in pensions and insurance are interpreted as no actual improvements in existing programs.

Second year: A wage increase of  $4\phi$ , increment increase  $0.1\phi$  an hour, producing an average increase including incentive impact of 5.8 cents per hour.

Union Statement—According to the union, "Such an economic package would be unacceptable to the steel workers even if you did not attach further conditions to it which are themselves totally unacceptable. You have described your proposal with respect to local working conditions clause in general language about the elimination of waste and improvement of efficiency designed to sound plausible, but which is only meaningful when your specific language proposal is examined."

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#### COMPARISON OF PRICES

(Effective Oct. 6, 1959)

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Price changes from previous week are shown by an asterisk (\*).

	Oct. 6 1959	Sept. 29	Sept. 8 1959	Oct. 7
Flat-Rolled Steel: (per pound)		2000	2000	
Hot-rolled sheets	5.10¢	5.10é	5.10¢	5.10¢
Cold-rolled sheets	6.275	6.275	6.275	6.275
Galvanized sheets (10 ga.)	6.875	6.875	6.875	6.875
Hot-rolled strip	5.10	5.10	5.10	5.10
Cold-rolled strip	7.425	7.425	7.425	7.425
Plate	5.30	5.30	5.30	5.30
Plates, wrought iron	13.55	13.55	13.55	13.55
Stainl's C-R strip (No. 302)	52.00	52.00	52.00	52.00
Tin and Terneplate: (per base bo	x)			
Tinplate (1.50 lb.) cokes	\$10.65	\$10.65	\$10.65	\$10.30
Tin plates, electro (0.50 lb.)	9.35	9.85	9.35	9.00
Special coated mfg. ternes	9.90	9.90	9.90	9.55
Bars and Shapes: (per pound)				
Merchant bar	5.675€	5.675¢	5.675¢	5.675¢
Cold finished bar	7.65	7.65	7.65	7.65
Alloy bar	6.725	6.725	6.725	6.725
Structural shapes	5.50	5.50	5.50	5.50
Stainless bars (No. 302)	46.75	46.75	46.75	45.00
Wrought iron bars	14.90	14.90	14.90	14.90
Wire: (per pound)	0.004	0.004	0.004	0.004
Bright wire	8.00€	8.00¢	8.00€	8.00¢
Rails: (per 100 lb.)				A
Heavy rails	\$5.75	\$5.75	\$5.75	\$5.75
Light rails	6.725	6.725	6.725	6.725
Semifinished Steel: (per net ton) Rerolling billets	\$80.00	\$80.00	\$80.00	\$80.00
	80.00	80.00	80.00	80.00
Slabs, rerolling		99.50	99.50	99.50
Forging billets	99.50			119.00
Alloys, blooms, billets, slabs		119.00	119.00	119.00
Wire Rods and Skelp: (per pound		0.404	6.40¢	6.40¢
Wire rods	6.40¢	6.40¢		
Skelp	5.05	5.05	5.05	5.05
Finished Steel Composite: (per po	ound)			
Base price	6,196€	6.196€	6.196€	6.196

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Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

#### Pig Iron Composite

Based on averages for basic iron at Valley furnace and foundry iron at Chicago, Phila-delphia, Buffalo and Birmingham.

Oct. 6 1959	Sept. 29 1959	Sept. 8 1959	Oct. 7 1958
Pig Iron: (per gross ton)			
Foundry, del'd Phila \$70.57	\$70.57	\$70.57	\$70.97
Foundry, Southern Cin'ti 73.87	73.87	78.87	78.87
Foundry, Birmingham 62.50	62.50	62.50	62.50
Foundry, Chicago 66.50	66.50	66.50	66.50
Basic, del'd Philadelphia 70.07	70.07	70.07	70.07
Basic, Valley furnace 66.00		66.00	66.00
Malleable, Chicago 66.50		66.50	66.50
Malleable, Valley 66.50		66.50	66.50
Ferromanganese, 74-76 pet Mn,	00100	00.00	00.00
cents per lb‡ 12.25	12.25	12.25	12.25
Pig Iron Composite: (per gross ton)			
Pig iron \$66.41	\$66.41	\$66.41	\$66.41
Scrap: (per gross ton)			
No. 1 steel, Pittsburgh \$45.50		\$43.50	\$44.50
No. 1 steel, Phila. area 43.50		40.50	41.50
No. 1 steel, Chicago 41.50		38.50	42.50
No. 1 bundles, Detroit 89.50		38.50	32.50
Low phos., Youngstown 46.50 No. 1 mach'y east, Pittsburgh 58.50		45.50	45.50
No. 1 mach'y cast, Pittsburgh 58.50		52.50	51.50
No. 1 mach'y cast, Phila 53.50		50.50	49.50
No. 1 mach'y cast, Chicago 63.50	* 62.50	60.50	53.50
Steel Scrap Composite: (per gross ton)		010.00	010.00
No. 1 hvy. melting scrap \$43.50		\$40.83	\$42.83
No. 2 bundles 29.83	• 29.17	27.67	28.83
Coke, Connellsville: (per net ton at or		*** ** **	FA 14 FA
Furnace coke, prompt\$14.50-15.50			
Foundry coke, prompt 18.50	18.50	18.50	18-18.50
Nonferrous Metals: (cents per pound to			00.50
Copper, electrolytic, Conn 30-31.50		30.00	26.50 26.50
Copper, Lake, Conn 31.50	† 102.50	30.00 102.00	96.75
Tin, Straits, N. Y 103.50			
Zinc, East St. Louis 12.00		11.00	10.50
Lead, St. Louis	12.80	12.80	11.80
Aluminum, virgin ingot 26.80		26.80	26.80
Nickel, electrolytic 74.00		74.00	74.00
Magnesium, ingot 36.00		36.00	36.00
Antimony, Laredo, Tex 29.50	29.50	29.50	29.50
Tentative. ‡ Average. ** Revised.			

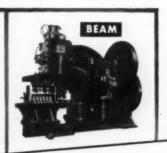
#### Steel Scrap Composites

Average of No. 1 heavy melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

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PITTEBURGE 23, PA.

## Conversion Deals Cut Scrap Flow

Large industrial plants have withdrawn large tonnages of scrap from their monthly lists.

Trade sources believe it is being sent to operating steel mills as part of conversion deals.

• Scrap prices continue to climb in nearly all markets. The trade expects steel mills to be back in operation before long. And it anticipates a strong demand will be accompanied by a sharp increase in the price of scrap.

Scrap is becoming increasingly scarce. Generation of industrial scrap is falling steadily as plants cut back production or halt operations entirely due to depleted inventories of steel.

Large companies, such as appliance or automakers, have withdrawn scrap from the market. It's generally believed these companies will use the scrap for conversion deals with operating mills. Reports of this come from both the East and Midwest.

Pittsburgh—The market seems to be gaining strength, but there isn't enough open activity to establish new price levels. Prices on industrial lists were up \$3 to \$4 from last month. A mill on the fringe of the district raised its prices \$3 from last month. How soon tonnage buys will come may depend on how steelmaking furnaces stand up when work starts.

Chicago — Advances in broker buying, a series of small-lot mill purchases, and a wave of local-purchases by out-of-town mills, combined to push up Chicago scrap prices \$1 to \$2. The dealer market appeared to freeze up, with many yards arguing they "won't sell at going prices."

Philadelphia — Dock strike has caused a temporary halt to scrap exports. However, many dealers welcome it. They have oversold their supplies. The extra time will let them accumulate needed scrap. All grades of scrap are still on the strong side. Some plants have removed material from lists and are sending it to operating steel mills as part of conversion deals.

New York — Between the steel strike and the dock strike, scrap traders here are starting to think there's a conspiracy against them. But prices have not yet been affected. Export orders, and trickles of domestic business have held up the market. Heavy breakable cast rose \$1 on an order from a mill still operating.

Detroit—Scrap yards are loaded. With inventories at their peak, larger yards and brokers are less bullish than a month ago. Most activity is dealer to dealer type. They are jockeying inventories to compile a varied selection of items for quick movement at any time. Fisher Body Div. made scrap awards as October opened. Chrysler, Cadillac and Ternstedt withdrew their offers. Chrysler reportedly made a sheet bundle conversion deal.

Cleveland—The dealers' market is up \$1 on appraisal, following strong bidding on local auto lists which went up about \$2.50. One major list of about 9000 tons has been held up, leading to talk of a possible barter arrangement for new steel. Dealer yards are looking forward to finally unloading turnings when steel operations resume. Most have taken a beating on them for years, since many are generated but few used locally. An expected ore shortage puts them in demand for blast furnace use.

St. Louis—There is a strong undertone to the market here. Cast iron and railroad grades are especially strong. A tight situation prevails as dealers seek to build up inventories.

Cincinnati—An area mill raised its buying price to market levels, but still isn't reaching for scrap. Dealers are bullish. Most plan to sit tight until the strike ends and then sell at higher prices. Major local lists will stay in the area.

Birmingham—The scrap market continues quiet with relatively few buyers. Dealers report ample supplies for present orders but few say inventories are high enough if there should be a sudden rush of orders. The exception to this is No. 2 bundles. A railroad list brought up to \$2 more per ton for some items compared with last month.

**Buffalo**—There is still underlying strength in the market. Despite market inactivity, prices are unchanged.

Boston—Business is at a standstill due to the dock strike and the steel strike, but there is a firm undertone in the market. Prices for several grades rose \$1 this week.

West Coast—Prices are very firm, tending upward. No. 1 heavy melting is in short supply. Export shipments to Japan are heavy.

Houston — Dock strike has brought previously brisk export activity to a standstill, but the market retains its firmness. Intake is slow and a shortage of No. 1 heavy melting steel is reported by brokers. Mexico came into the border market at \$2 per ton higher.

CII

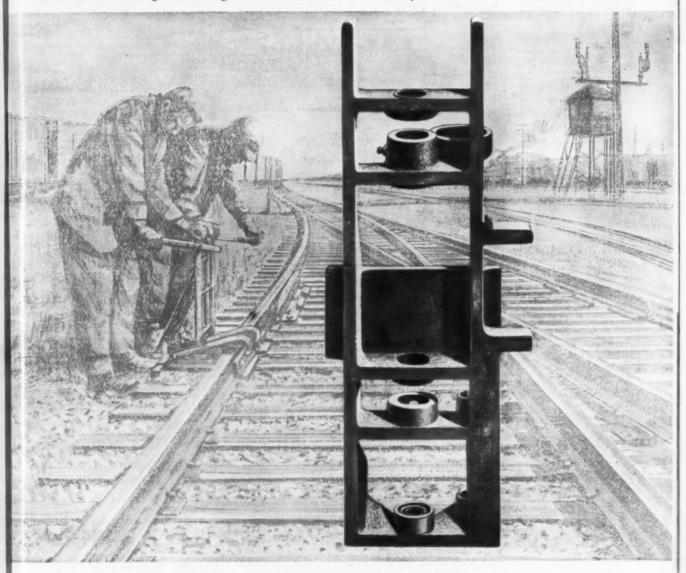
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This duce assert It way.

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How the Foundry Industry serves America . . . #2 of a Series



#### SINGLE IRON CASTING REPLACES WELDMENT... REDUCES COST BY 663%

This power track drill frame was originally produced as a weldment. It required cutting, positioning, assembling, welding and inspecting 23 separate parts. It was a major manufacturing headache in every way, and the scrap ran high.

Foundry engineers redesigned the part as a one-piece malleable iron casting at one-third the cost, plus additional savings in final machining operations. This is impressive proof that modern iron castings deliver outstanding performance and impressive economies when specified by the industrial designer.

Hanna Furnace is proud to be part of this great industry and will continue to provide foundries with all regular grades of pig iron . . . malleable, foundry, Bessemer, intermediate low phosphorus, as well as HANNATITE® and Hanna Silvery.



THE HANNA FURNACE CORPORATION

uffalo • Detroit • New York • Philadelphia Aerchant Pig Iron Division of National Steel Corp.



#### Pittsburgh

No. 1 hvy. melting	45.00	to	\$46.00
No. 2 hvy. melting	35.00	to	30.00
No. 1 dealer bundles	46.00	to	47.00
	51.00		52.00
No. 1 factory bundles	31.00		32.00
No. 2 bundles			
No. 1 busheling	45.00	to	46.00
Machine shop turn	22.00	to	23.00
Shoveling turnings	29.00	to	30.00
Cast iron borings	28.00	to	29.00
Low phos. punch'gs plate.	51.00	to	52.00
	36.00		37.00
Heavy turnings			
No. 1 RR. hvy. melting	48.00		49.00
Scrap "ails, random lgth	57.00		58,00
Rails 2 ft and under	62.00	to	63.00
RR specialties	55.00	to	56.00
No. 1 machinery cast	53.00	to	54.00
Cupola cast	47.00	to	48.00
Cupons cast.	45.00		46.00
Heavy breakable cast	40.00	fO	10.00
Stainless			
18-8 bundles and solids.	235.00	to	240.00

## 

#### Chicago

No. 1 hvy. melting \$	41.00	to	\$42.00
No. 2 hvy. melting	39.00		40.00
No. 1 dealer bundles	42.00		43.00
No. 1 factory bundles	48,00		49.00
No. 2 bundles	29.00		30.00
No. 1 busheling	42.00		43.00
Machine shop turn	22.00		23.00
Mixed bor, and turn	24.00		25.00
Shoveling turnings	24.00		25.00
Cast iron borings	24.00		25.00
Low phos. forge crops	55.00	to	56.00
Low phos. punch'gs plate,			
14 in. and heavier	53.00		54.00
Low phos. 2 ft and under.	51.00		52.00
No. 1 RR hvy. melting	47.00	to	48.00
Scrap rails, random lgth	57.00	to	58.00
Rerolling rails	65.00	to	66.00
Rails 2 ft and under	62.00		63.00
Angles and splice bars	56.00	to	57.00
RR steel car axles	61 00	to	62.00
RR couplers and knuckles	53.00	to	54.00
No. 1 machinery cast	63.00	to	64.00
Cupola cast	56.00	to	57.00
Cast iron wheels	50.00	to	51.00
Malleable	64.00	to	65.00
Stove plate	52.00	to	53.00
Steel car wheels	53.00		54.00
Stainless			
18-8 bundles and solids.	220,00	to	225.00
18-8 turnings	120.00	to	125.00
430 bundles and solids	20.00	to	125.00
430 turnings	60.00	to	65.00

#### Philadelphia Area

-		
No. 1 hvy. melting	43.00	to \$44.00
No. 2 hvy. melting	37.00	to 38.00
No. 1 dealer bundles	45.00	to 46.00
No. 2 bundles	28.00	to 29.00
No. 1 busheling	45.00	to 46.00
Machine shop turn	23.00	to 24.00
Mixed bor. short turn	22.00	to 23.00
Cast iron borings	21.00	to 22.00
Shoveling turnings	26.00	to 27.00
Clean cast. chem. borings.	30.00	to 31.00
Low phos. 5 ft and under.	46.00	to 47.00
Low phos. 2 ft punch'gs	48.00	to 49.00
Elec. furnace bundles	46.00	to 47.00
Heavy turnings	34.00	to 35.00
RR specialties	47.00	to 48.00
Rails 18 in, and under	63.00	to 64.00
Cupola cast	42.00	to 43.00
Heavy breakable cast	47.00	to 48.00
Cast iron car wheels	47.00	to 48.00
Malleable	67.00	to 68.00
No. 1 machinery cast	53.00	to 54.00

#### Cincinnati

Brokers buying prices per gross ton on	cars:
No 1 hvy. melting \$35.50 to \$	36.50
No. 2 hvy. melting 30.50 to	31.50
	36.50
	26.00
	18.00
	20.00
	19.00
	48.00
	51.00
	59.00
	48.00
	44.00
Drop broken cast 57.00 to	58.00

#### Youngstown

No. 1 hvy. melting .	 *			. !	\$45.00	to	\$46.00
No. 2 hvy. melting					38.00	to	39.00
No. 1 dealer bundles			*		45.00	to	46.00
No. 2 bundles					28.50	to	29.50
Machine shop turn		*			19.50	to	20.50
Shoveling turnings .							
Low phos. plate					46.00	to	47 00

#### Iron and Steel Scrap

Going prices of Iron and steel scrap as obtained in the trade by THE IRON AGE based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

#### Cleveland

No. 1 hvy. melting\$	41.50	to	\$42.50
No. 2 hvy. melting	34.50	to	35.50
No. 1 dealer bundles	41.50	to	42.50
No. 1 factory bundles	46.00	to	47.00
No. 2 bundles	25.00	to	26.00
No. 1 busheling	41.50	to	42.50
Machine shop turn	16.00	to	17.00
Mixed bor. and turn	21.00	to	22.00
Shoveling turnings	21.00		22.00
Cast iron borings	21.00	to	22.00
Cut structural & plates, 2			
ft & under	47.00	to	48.00
Drop forge flashings	41.50	to	42.50
Low phos. punch'gs plate.	42.50	to	43.50
Foundry steel, 2 ft & under	41.00	to	42.00
No. 1 RR hvy. melting	44.00		45.00
Rails 2 ft and under	57.00	to	58.00
Rails 18 in. and under	58.00	to	59.00
Steel axle turnings	24.00	to	25.00
Railroad cast	56.00	to	57.00
No. 1 machinery cast	54.00	to	55.00
Stove plate	51.00	to	52.00
Malleable	67.00	to	68.00
Stainless		-	
18-8 bundles	15.00	to	225.00
18-8 turnings	15.00	to	120.00
430 bundles	15.00	to	120.00

#### Buffalo

No. 1 hvy. melting	\$35.00 to	\$36.00
No. 2 hvy. melting	28.00 to	29.00
No. 1 busheling	35.00 to	36.00
No. 1 dealer bundles	35.00 to	36.00
No. 2 bundles	24.00 to	25.00
Machine shop turn	16.00 to	17.00
Mixed bor, and turn	17.00 to	18.00
Shoveling turnings	20.00 to	21.00
Cast iron borings	17.00 to	18.00
Low phos. plate	40.00 to	41.00
Structurals and plate.		
2 ft and under	41.00 to	42.00
Scrap rails, random lgth		40.00
Rails 2 ft and under		50.00
No. 1 machinery cast		52.00
No. 1 cupola cast		48.00

#### St. Louis

No. 1 hvy. melting	38.00	to	\$39.00
No. 2 hvy. melting	35.00	to	36.00
No. 1 dealer bundles	43.00	to	44.00
No. 2 bundles	26.00	to	27.00
Machine shop turn	18.00		19.00
Shoveling turnings	20.00	to	21.00
Cast iron borings	24.00		25.00
No. 1 RR hvy, melting	46.00		
Rails, random lengths	49.00		50.00
Rails, 18 in, and under	54.00	to	55.00
Angles and splice bars	48.00		49.00
RR specialties	49.00		50.00
Cupola cast	55.00	to	56.00
Heavy breakable cast	44.00		
Stove plate	46.00		47.00
Cast iron car wheels	46.00		
Rerolling rails	65.00		
Unstripped motor blocks	45.00		
Unstripped motor blocks	45.00	to	40.00

#### Birmingham

No. 1 hvy. melting	35.00	to	\$36.00
No. 2 hvy. melting	29.00	to	30.00
No. 1 dealer bundles	35.00	to	36.00
No. 1 special bundles	38.00	to	39.00
No. 2 bundles	24.00	to	25.00
No. 1 busheling	40.00	to	41.00
Machine shop turn	24.00	to.	
Shoveling turnings			
Cast iron borings	14.00	to	
Electric furnace bundles	40.00	to	
Elec. furnace, 3 ft & under	38.00		
Bar crops and plate	45.00		
Structural and plate, 2 ft.	44.00		
No. 1 RR hvy. melting			
Scrap rails, random lgth	46.00		
Rails, 18 in. and under	52.00		
Angles and splice bars	44.00		
Rerolling rails	63.00		
No. 1 cupola cast			
Stove plate	53.00		
Cast iron car wheels			
Unstripped motor blocks	41.00	to	42.00

#### **New York**

Brokers buying prices per gross ton on cars:
No. 1 hvy. melting\$33.00 to \$34.00
No. 2 hvy. melting 29.00 to 30.00
No. 2 dealer bundles 22,00 to 23,00
Machine shop turnings 8.00 to 9.00
Mixed bor, and turn, 10.00 to 11.00
Shoveling turnings 12.00 to 13.00
Clean cast, chem. borings, 25.00 to 26.00
No. 1 machinery cast 39.00 to 40.00
Mixed yard cast 37.00 to 38.00
Heavy breakable cast 34.00 to 35.00
Stainless
18-8 prepared solids 195.00 to 200.00
18-8 turnings 85.00 to 90.00
430 prepared solids 85.00 to 90.00
430 turnings 20.00 to 25.00

#### Detroit

Dellon	
Brokers buying prices per gross ton on	cars:
No. 1 hvy. melting\$37.00 to \$	38.00
No. 2 hvy. melting 26.00 to	27.00
No. 1 dealer bundles 39.00 to	40.00
No. 2 bundles 21.00 to	22.00
No. 1 busheling 36.00 to	37.00
Drop forge flashings 37.00 to	38.00
Machine shop turn, 17.00 to	18.00
Mixed bor, and turn,, 19.00 to	20.00
Shoveling turnings 19.00 to	20.00
Cast iron borings 19.00 to	20.00
Heavy breakable cast 38.00 to	39.00
Mixed cupola cast 46.00 to	47.00
Automotive cast 52.00 to	53.00
Stainless	
18-8 bundles and solids. 190.00 to	200.00
18-8 turnings 80.00 to	90.00
430 bundles and solids 85.00 to	95.00

#### Boston

6021011	
Brokers buying prices per gre	ss ton on cars:
No. 1 hvy. melting	31.00 to \$32.00
No. 2 hvy. melting	23.00 to 24.00
No. 1 dealer bundles	32.00 to 33.00
No. 2 bundles	16.00 to 17.00
No. 1 busheling	32.00 to 33.00
Machine shop turn	11.00 to 12.00
Shoveling turnings	13.00 to 14.00
Clean cast. chem. borings.	18.50 to 19.50
No. 1 machinery cast	40.00 to 41.00
Mixed cupola cast	37.00 to 38.00
Heavy breakable cast	34.00 to 35.00

#### San Francisco

No. 1 hvy. melting	\$36.00
No. 2 hvy. melting	33.00
No. 1 dealer bundles	33.00
No. 2 bundles	22.00
Machine shop turn	17.00
Cast iron borings	17.00
No. 1 cupola cast	47.00
Les Angeles	

## 

## (foundry) \$47.00 to 48.00 No. 1 cupola cast. 47.00 to 5 castle Seattle No. 1 hvy. melting \$35.00 No. 2 hvy. melting 22.00 No. 2 bundles 22.00 No. 1 cupola cast. 36.00 Mixed yard cast. 36.00

#### Hamilton, Ont.

Brokers buying prices	per	gress	ton	on cars:
No. 1 hvy. melting .				\$32.25
No. 2 hvy. melting .				28.25
No. 1 dealer bundles				32.25
No. 2 bundles				22.75
Mixed steel scrap .				24.25
Bush., new fact., pr	ep'd			32.25
Bush., new fact., un	prep	o'd .		26.25
Machine shop turn.				14.00
Short steel turn				17.00
Mixed bor. and turn.				13.00
Rails, rerolling				37.00
Cast scrap		\$4	6.50	to 48.00

#### Houston

116831	911													
Brokers	buying	prices	1	pi	01	•	8	res	8		tı	m.	on cars:	
No. 1 h	vy. me	lting .											\$34.00	
No. 2 h	vy. me	Iting .											31.00	
No. 2 1	undles												20.00	
													16.00	
Shovelt													20.00	
Cut str	uctural	plate												
2 ft	& unde	r						. 3	4	7	. 5	0	to 48.50	
Unstrip														
													to 47.00	
Hoguv														

TH



## farms, factories, freezers

• Even before the days of written history man's food supply depended upon iron and steel to provide better plows and sharper sickles. His iron axes and knives have been found among ancient implements near Lake Hallstatt in Austria.

In more modern times, a kettle of about one quart capacity, made in Lynn, Massachusetts, in 1644, was the first iron casting produced in America. In 1819 a cast iron plow was patented by Jethro Wood of Cayuga County, New York.

To provide, process and prepare food—for cultivators on the farm, machinery in the packing plant, cooking ranges in the kitchen—now, more than ever, the multi-billion dollar food industry depends upon steel. And to maintain an adequate tonnage from the mills, an uninterrupted flow of scrap is indispensable.

For the purchase or sale of iron or steel scrap... phone or write "Your Chicago Broker"



231 S. La Salle St., Chicago • Telephone Andover 3-3900

## Nickel Markets Are Firming

The evidence is too strong to ignore: Nickel markets are gaining strength.

Example: The Nicaro, Cuba, plant is selling more than it can produce.

The evidence is growing that despite the steel strike, the nickel market is taking on a much firmer tone.

A report from Europe says demand there is up sharply. This is attributed to a "general pickup in business."

A Washington source says the government put its Nicaro, Cuba, plant up for sale again this fall because of "tremendous improvement in the market in the past year." This observer also notes the Nicaro plant has been selling, with the help of stocks, more than it has been producing for the last six months or so.

No Trouble Moving—And some nickel users are now suggesting that International Nickel, the world's biggest producer, agreed to forego its contract to put nickel to the government because it would have no trouble moving this metal in regular commercial markets.

Despite the growing strength, no one believes there is any threat of shortage. There is enough nickel around to satisfy everyone, even when the steel companies boost their buying when their strike ends.

Interest in Nicaro—The government is getting lively interest in the Nicaro smelter, which it is trying to sell, despite the uncertainty of taxes when a private owner takes over.

One official reports over 100 requests for a prospectus on the operation. At least 20 came from companies "capable of submitting a bid."

Who will bid? National Lead Co., now running the smelter for the government, will definitely bid. Freeport Sulphur Co., which built the plant, is considering the situation. And North American Nickel Co. has been formed by St. Joseph Lead Co., Falconbridge Nickel Co., Bunker Hill Co., and Blyth and Co., apparently to bid on Nicaro.

There has been some talk that the Cuban government would bid for the plant. But, under the present rules, this would not be acceptable. The controlling interest, at least 51 pct, must be held by U. S. citizens.

#### Aluminum

Aluminum Co. of America has a new mill product with some farreaching market implications.

It's aluminum building sheet, in coils or flat sheet, made by bonding a high corrosion-resistant alloy to a structurally stronger base alloy.

Affect the Market — Significant: The new single product will replace "a host of other sheet alloys previously employed in the building product line." And Alcoa says its list price will be competitive with galvanized steel.

The new building sheet will sell

for 34.5¢ to 40¢ per lb.

Wage Hikes—Alcoa and the other major producers actually are working under higher labor costs. But they don't know how high. Their contracts with their unions have been extended. Wage hikes will be retroactive back to August 1.

Selling only one type of sheet instead of many will let Alcoa use high speed rolling equipment more profitably. Considering that 70 pct of all aluminum orders are under 2000 lb, this is important.

Some market observers suggest this standardization is the direction the industry will take on other products to cure sagging profit margins.

Tin prices for the week: Sept. 30 —102.75; Oct. 1—103.00; Oct. 2 —103.25; Oct. 5—103.375; Oct. 6 —103.50.\*

\* Estimate.

#### Monthly Average Metal Prices

(Cents per lb except as noted)

Average prices of the major nonferrous metals in SEPTEMBER based on quotations appearing in THE IRON AGE, were as follows:

TUHUWS.	
Electrolytic copper, del'd	30.57
Conn. Valley-	
Copper, Lake	31.14
Straits Tin, New York-	102.428
Zinc, E. St. Louis	11.33
Lead, St. Louis	12.80
Aluminum ingot	26.80

Note: Quotations are on going prices

#### **Primary Prices**

(cents per lb)	price	price	change	
Aluminum pig	24.78	24.00	8/1/58	
Aluminum Inget	26.80	28.10	8/1/88	
Copper (E)	30-31.50	30.00	9/9/59	
Copper (CS)	33.00	30.00	9/1/59	
Copper (L)	31.50	30.00	9/9/99	
Leed, St. L.	12.80	11.80	8/24/88	
Lead, N. Y.	12.00	12.00	8/24/89	
Magneelum Inget	36.00	34.80	8/13/88	
Magnesium plg	35.26	33.78	8/13/50	
Nickel	74.00	64.50	12/6/88	
Titanium sponge	150-160	182-182	8/1/80	
Zinc, E. St. L.	12.00	11.60	9/22/80	
Zine, N. Y.	12.50	11.50	9 22/59	

ALUMINUM: 99% Ingot COPPER: (E)

— electrolytic, (CS) — custom smelters,
electrolytic. (L) — lake. LEAD: common
grade. MAGNESIUM: 99.8% pig Velasco.
Tex. NICKEL: Port Celborne, Canada.
ZINC: prime western. TIN: See above;
Other primary prices, pg. 160.

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### Hunting

for

## STAINLESS STEEL?

## We've got it!

Strikes create shortages. Need stainless? Pick up your phone. Call any one of the twenty-seven Chase Service Centers...in the nationwide chain of Chase Warehouses and Sales Offices.

We'll make immediate delivery on any order, of any stainless steel stock we have in inventory or ship direct from our mill sources. To help you with your requirements, ask for your copy of our National Stainless Steel Stock List.

Chase Stainless Steel stocks are available in: bars. sheet, strip, wire, plates, pipe and tube.

Call the nearest Chase Warehouse or Sales Office listed below:



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ATLANTA, GA Tel. PLaza 5-5731 BALTIMORE, MD. Tel. PLaza 2-2565 BOSTON, MASS. Tel. Liberty 2-0126 CHARLOTTE, N. C. CHICAGO, ILL Tel. TUxedo 9-4000

CINCINNATI, OHIO Tel. PArkway 1-3326 CLEVELAND, OHIO Tel. HEnderson 2-2300 DALLAS, TEXAS Tel. Riverside 7-4271 DENVER, COLORADO DETROIT, MICH. Tel. TOwnsend 8-2939

Tel. Riverside 2-1048 HOUSTON, TEXAS INDIANAPOLIS, IND. Tel. MElrose 7-1543 KANSAS CITY, MO. Tel. Victor 2-1710

GRAND RAPIDS, MICH. LOS ANGELES, CALIF. Tel. RAymond 3-5351 MILWAUKEE, WIS. Tel. Division 2-7630 MINNEAPOLIS, MINN. Tel. FEderal 6-4661 NEW ORLEANS, LA. Tel. AMherst 5441

**NEW YORK-NEWARK** Tel. TWining 4-0500 PHILADELPHIA, PA. Tel. BAldwin 3-5800 PITTSBURGH, PA. Tel. CEdar 1-7900 PROVIDENCE, R. I. Tel. DExter 1-2300 ROCHESTER, N. Y. Tel. HAmilton 6-3959

ST. LOUIS, MO. Tel. PRospect 6-3111 SAN FRANCISCO, CALIFORNIA Tel. PLaza 6-4809-JUno 3-4994 SEATTLE, WASH. Tel. MAin 4-1862 WATERBURY, CONN.

Tel. PLaza 6-9444

#### NONFERROUS PRICES

#### MILL PRODUCTS

(Cents per lb unless otherwise noted)

(Base 30,000 lb, f.o.b. customer's plant) Flat Sheet (Mill Finish and Plate) ("F" temper except 6061-0)

Alloy	Alioy .032 .081		.136	. 250- 3.
1100, 3003	45.7	43.8	42.8	43.3
	53.1	48.4	46.9	46.0
	50.1	45.7	43.9	44.9

#### Extruded Solid Shapes

Factor	6063 T-5	6062 T-6
6-8	42.7-44.2	51.1-54.8
12-14 24-26	43.2-44.7	52.0-56.5 62.8-67.5
36-38	46.7-49.2	86.9-90.5

#### Screw Machine Stock-2011-T-3

Size"	34	%-%	34-1	114-114
Price	62.0	61.2	59.7	57.3

#### Roofing Sheet, Corrugated

(Per sheet, 26" wide base, 16,000 lb)

Length"→	72	96	120	144
.019 gage	\$1.411	\$1.884	\$2.353	\$2.823
	1.762	2.349	2.937	3.524

#### MAGNESIUM

(F.o.b. shipping pt., carload frt. allowed) Sheet and Plate

Type↓ Gage→	.250 3.00	.250- 2.00	.188	.081	.032
AZ31B Stand, Grade		67.9	69.0	77.9	103.1
AZ31B Spec		93.3	95.7	108.7	171.3
Tread Plate		70.6	71.7		
Tooling Plate	73.0				

#### **Extruded Shapes**

factor->	6-8	12-14	24-26	36-38
Comm. Grade. (AZ31C)	65.3	65.3	66.1	71.5
Spec. Grade (AZ31B)	84.6	85.7	90.6	104.2

#### Alloy Ingot

#### NICKEL, MONEL, INCONEL

(Base prices J.o.b. mill)		
"A" Nickel	Monel	Inconel
Sheet, CR 138	120	138
Strip, CR 124	108	138
Rod, bar, HR., 107	89	109
Angles, HR 107	89	109
Plates, HR 130	110	126
Seamless tube . 157	129	200
Shot, blocks	87	

#### COPPER, BRASS, BRONZE

(Freight included in 5000 the)

	Sheet	Wire	Rod	Tube
Copper	54.63	******	52.86	55.82
Brass, Yellow	48.65	49,19	48.59	52.06
Brass, Low	51.48	52.02	51.42	54.79
Brass, R L	52.48	53.02	52.42	55.79
Brass, Naval	53.29		47.10	56.70
Muntz Metal	51.35		46.66	
Comm. Bz.	53.92	54.46	53.86	56.98
Mang. Bz.	56.62		50.28	
Phos. Bz. 5%	75.34		75.84	A-2-11)

					_
Free Cutting	Brass	Rod.		. 33.	N/G

#### TITANIUM

(Base prices, f.o.b. mill)

(Base prices, f.o.b. mill)

Sheet and strip, commercially pure, \$7.25-\$8.50; alloy, \$13.40-\$17.00. Plate, HR, commercially pure, \$5.25-\$6.00; alloy, \$8.00-\$10.00. Wire, rolled and/or drawn, commercially pure, \$5.75-\$6.25; alloy, \$7.75-\$10.00; Bar, HR or forged, commercially pure, \$4.25-\$5.00; alloy, \$3.55-\$4.10; alloy, \$3.55-\$5.75.

#### PRIMARY METAL

(Cents per lb unless otherwise noted)

#### REMELTED METALS

Brass Innat

(Centi			li	)	d	Ě	el	61	24	81	re	36	ι,	,	0	a	r	le	0	u	l	3)	)		
85-5-5		t																							
No.	115	*					*			*	*			*		,	*					*	*		29.25
No.	120																								28.00
No.	123																								27.00
80-10-	10 in	g	0	t																					
No.										ě.															33.50
No.																									31.50
88-10-					-			•	•	•	^	^	•	•	•	•	•	•	•	•	•	•	•		
No.																									42.00
No.																									37.75
No.																									33.50
Yellow	inge			-	-	-		-	-		-		-	Ť	-	-	-		-	-	-	^	Ĩ		
No.																								*	23.75
Mange							Ze		*	*	*	*	*	*	•	*	•	*	•	•	*	•	1	•	
No.	421	·																							26.75

#### Aluminum Ingot

(Cents per lb del'd 30,000 lb and over)

95-5 aluminun	n-silicon	alloys	
0.30 copper	max		.25-00-25.25
0.60 copper	max		.24.75-25.00
Piston alloys	(No. 13:	2 type).	. 26.75-27.75
No. 12 alum.	(No. 2 1	grade)	. 23.50-24.00
108 alloy			.24.00-24.50
195 alloy			.26.50-27.50
13 alloy (0.60	copper	max.)	.24.75-25.00
AXS-679 (1 p	et zine)		.23.75-24.75

#### Steel deoxidizing aluminum notch bar

31011010	1100 01 11101										
Grade	1-95-9714	%			×		*		×		.24.00-25.00
Grade	2-92-95%										.22.75-23.75
	3-90-92%		*			*	×	*	×	ė	.21.75-22.75
Grade	485-90%			*	÷	*				*	.21.25-22.25

#### SCRAP METALS

Brass Mill Scrap

(Cents per pound, add 1¢ per 10 ments of 20,000 lb and over) Heavy	for ship- Turnings
Copper 27 1/2	26 %
Yellow brass 20%	18%
Red brass 24 1/4	231/2
Comm. bronze 25 1/4	241/2
Mang bronze 1986	1816

#### Free cutting rod ends. 19% **Customs Smelters Scrap**

(Cents per pound carload lots, delivered

	to reju		
No. 1 copper v	ire		 26 14
No. 2 copper v	ire		 24%
Light copper .			 221/2
*Refinery bras			 241/4
Copper bearing			
*Dry copper	conter	at.	

#### Ingot Makers Scrap

(Cents per pouna cartoaa tots,	aenverea
to refinery)	0.5
No. 1 copper wire	27
No. 2 copper wire	24 1/2
Light copper	221/2
No. 1 composition	911/
No. 1 comp. turnings	16
Hvy. yellow brass solids	15 16
Brass pipe	161/
Radiators	10 72

			A	1	26	91	n	í2	81	61	m	k		
														14 -15
Mixed	new	clips			*		*			*			*	161/2-17
Mixed	tur	nings,		d	r	y		*	*	*	*		*	141/4-151/4

#### Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

#### Copper and Brass

No. 1 copper wire 23%-24
No. 2 copper wire 2134-22
Light copper 19 34 20
Auto radiators (unsweated). 14 -141/2
No. 1 composition 181/2-19
No. 1 composition turnings 17 -171/2
Cocks and faucets 1414-1434
Clean heavy yellow brass 12 % -13 %
Brass pipe 1414-1434
New soft brass clippings 14 % 15 %
No. 1 brass rod turnings 12 -121/2
Aluminum

Aluminum crankcase	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$
Zinc	
New zinc clippings	5½- 5¾ 3¾- 4
Old zinc	3%-4
Zinc routings	21/4 - 21/4
Old die cast scrap	21/4 - 21/4

MICKEL GRG MOREL	
Pure nickel clippings	52-54
Clean nickel turnings	40
Nickel anodes	52-54
Nickel rod ends	52-54
New Monel clippings	30-32
Clean Monel turnings	20-23
Old sheet Monel	26-28
Nickel silver clippings, mixed	18
Nickel silver turnings, mixed	15
Lead	

### Soft scrap lead 8 % Battery plates (dry) 4 ¼ Batteries, acid free 2 ½

Miscellaneous
Block tin 77 —78
No. 1 pewter 59 -60
Auto babbitt 40 -41
Mixed common babbitt 9 % -10 %
Solder joints 14 -14 1/2
Siphon tops
Small foundry type 10 4-10 %
Lino, and stereotype 914- 914
2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
Lino. and stereo. dross 2% - 3%
Electro dross 2% — 31/4
Electrotype

TH



Official U.S. Air Force Photo



... specify Vancoram Ferrochrome-Silicon! From the complete series of Vancoram Ferrochrome-Silicon alloys, you can select a grade with a chromium-silicon content ratio that is just right for the stainless or heat resistant steels, irons, or the other alloy products you melt. You can be sure you're specifying the best because these alloys, produced

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IRO

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## MACLEOD



BLAST CLEANING EQUIPMENT

CUSTOM DESIGNED BLAST CABINET

Specialists in designing and building "tailor-made" blast cleaning equipment, MACLEOD has been serving the needs of American industry for more than 62 years. Shown above is a blast cleaning cabinet that was specially-designed to meet a customer's individual requirements. Work rolls are motor driven, and blast nozzles are mounted on a manually operated lance which positions the nozzle over the work. Lance can be power driven, if desired, without modification. Write for descriptive literature on all MACLEOD Blast Cleaning Equipment—Cabinets, Rooms, Machines, Dust Arresters—that can be custom-designed to your individual requirements.



	STEEL	BILLE	TS, BLO	oms.	PIL-		SHAPES	3						
			SLABS		ING	STE	RUCTUR	ALS			STR	IP		
F	PRICES	Carbon Rerolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton	Sheet Steel	Carbon	Hi Str. Low Alloy	Carbon Wide- Flange	Hot- rolled	Cold- rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy	Alloy Hot- rolled	Alloy Cold- rolled
1	Bethiehem, Pa.			\$119.00 B3		5.55 B3	8.10 B3	5.55 B5						
1	Bufalo, N. Y.	\$80.00 R3,	\$99.50 R3,	\$119.00 R3, B3	6.50 B3	5.55 B3	8.10 B3	5.55 B3	5.10 B3, R3	7.425 S10, R7	7.575 B3			
	Phila., Pa.	B3	B3	В)						7.875 P15				
-	Harrison, N. J.							-						15.55 C//
	Conshohecken, Pa.		\$104.50 .42	\$125.00 42					5.15 42		7.575 A2			
	New Bedford, Mass.			***************************************		-	-			7.875 R6				
	Johnstown, Pa.	\$80.00 B3	\$99.50 B3	\$119.00 B3		5.55 B3	8.10 B3							
EAST	Boston, Mass.					1				7.975 T8				
	New Haven, Conn.									7.875 DI				
	Baltimore, Md.									7.425 T8				15.90 T8
- 1	Phoenixville, Pa.					5.55 P2		5.55 P2						
	Sparrows Pt., Md.								\$.10 B3		7.575 B3			
	New Britain, Bridgeport, Wallingford, Conn.			\$119.00 N8						7.875 W1,S7				
	Pawtucket, R. I. Worcester, Mass.									7.975 N7, A5				15.90 N7 15.70 T8
-	Alton, Ill.								5.30 L1					
	Ashland, Ky.							-	5.10 A7		7.575 A7			
	Canton-Massillon, Dover, Ohio	,	\$102.00 R3	\$119.00 R3, \$114.00 T5						7.425 G4		10.80 G#		
	Chicaga, Franklin Park, Evanston, III.	\$80.00 UI, R3	\$99.50 UI, R3,W8	\$119.00 UI, R3,W8	6.50 UI	5.50 UI. W8,P13	8.85 UI, YI,W8	5.50 UI	5.10 W8, N4,A1	7.525 <i>A1</i> , <i>T8</i> , <i>M8</i>	7.575 W8		8.40 W8, S9,13	15.55 At S9,G4, 7
	Cleveland, Ohio									7.425 A5, J3		10.75 A5	8.40 /3	
	Detroit, Mich.			\$119.00 R5					5.10 G3, M2	7.425 M2, SI, DI, PII	7.575 G3	10.80 S/		
	Anderson, Ind.						-	-	IM &	7.425 G4				
WEST	Gary, Ind. Harber,	\$80.00 UI	399,50 UI	\$119.00 UI,		5.50 UI.	8.05 UI.	5.50 /3	5.10 UI, I3, YI	7.425 Y/	7.575 UI,	10.90 Y/	8.40 UI,	
	Indiana			YI		13 5.50 N4	7,75 N4	5.50 N4	13, Y1 5.20 N4		13,Y1		YI	
MIDDLE	Sterling, III.	\$80.00 N4				3.30 /47	1.13/4	3.39 / 4	3.29 /44	7.575 R5				15.70 RS
Z	Indianapelis, Ind.						-		5.10 //9	1.313 10			8.40 /19	Tale A
	Newport, Ky. Niles, Warren, Ohio		399.50 SI;	\$119.00		-	-	-	5.10 R3,	7.425 R3,	7.575 R3,	10.80 R3,	8.40 SI	15,55 S/
	Sharon, Pa.		C10	CIO,SI					SI	T4,SI	SI	SI		
	Owenshore, Ky.  Pittsburgh, Midland, Butler,	\$88.00 G5 \$88.00 UI, P6	\$99.50 G5 \$99.50 U1, C11,P6	\$119.00 G5 \$119.00 UI, CII,B7	6.50 UI	5.50 UI. J3	8.05 UI, J3	5.50 UI	5.10 P6	7.425 <i>J3,B4</i> 7.525 <i>E3</i>			8.40 59	15.55 <i>S</i> 9
	Aliquippa, McKeesport, Pa.													
	Weirton, Wheeling, Follanshee, W. Va.	1			6.50 UI, W3	5.50 W3		5.50 W3	5.10 W3	7.425 W5	7.575 W3	10.80 W3		
	Youngstown, Ohio	\$80.00 R3	\$99.50 YI, CIO	\$119.00 Y/			8.05 YI		5.10 U	7.425 YI,RS	7.575 UI, YI	10.95 Y/	8.46 UI, YI	15.55 RS
	Fontana, Cal.	\$90.50 K!	\$109.00 K/	\$140.00 K/		6.30 KI	8.85 K1	6.45 K1	5.825 KI	9.20 K1				
	Geneva, Utah		\$99.50 C7			5.50 C7	8.05 C7							
	Kansas City, Mo.					5.60 S2	8.15 S2						8.65 S2	
	Los Angelos, Terrance, Cal.		\$109.00 B2	\$139.00 B2		6.20 C7, B2	8.75 B2		5.85 C7, B2	9.30 CI,R5			9.60 B2	17.75 /3
WEST	Minnequa, Colo.				-	5.80 C6			6.20 C6	9.375 C6				
-	Portland, Ore.					6.25 02	-							
	San Francisco, Niles, Pittsburg, Cal.		\$100.00 B2			6.15 B2	8.70 B2		5.85 C7, B2					
	Seattle, Wash.		\$109.00 B2	-	-	6.25 B2	8.80 B2		6.10 B2					
	Atlanta, Ga.					5.70 A8			5.10 A8					
SOUTH	Fairfield, Ala. City, Birmingham, Ala.	\$80.00 72	\$99.50 72			5.50 T2 R3,C16	8.85 72		5.10 T2, R3,C16		7.575 T2			
Sc	Houston, Lone Star,	,	\$104.50 S2	\$124.00 SZ		5.60 S2	8.15 S2						8.65 S2	

EAST

_					SHE	EIS				ROD	IIIII	AIL	
F	PRICES	Hot-rolled 18 ga. & hvyr.	Cold- rolled	Galvanized (Hot-dipped)	Enamel- ing	Long Terne	Hi Str. Low Alloy H.R.	Hi Str. Low Alloy C.R.	Hi Str. Low Alloy Galv.		Cokes* 1.25-lb. base box	Electro** 0.25-lb. base box	Holloward Enameling 29 ga.
	Buffalo, N. Y.	5.10 B3	6.275 B3				7.525 B3	9.275 B3		6.40 W6	† Special coated mfg. term deduct 35¢ from 1.25-lb.		
	Claymont, Del.										coke base bor lb./0.25 lb. ac	14 55¢.	
	Coatesville, Pa.										Can-makin BLACKPLAT	E 55 to 128	
	Conshohocken, Pa.	5.15 A2	6.325 A2	-			7.575 AZ				lb. deduct \$2 1.25 lb. coke	base box.	
	Harrisburg, Pa.										* COKES:		
	Hartford, Conn.										25¢; 0.75-lb.	: 0.50-lb. add add 65¢; 1.00-	
EMOI	Johnstown, Pa.									6.40 B3	lb. add \$1.00. 1.00 lb./0.25	b. add 65¢.	
	Fairless, Pa.	5.15 UI	6.325 UI	-			7.575 UI	9.325 UI			\$10.50 UI	\$9.20 UI	
	New Haven, Conn.					-							
	Phoenixville, Pa.												
	Sparrows Pt., Md.	5.10 B3	6.275 B3	6.875 B3			7.525 B3	9.275 B3	10.025 B3	6.50 B3	\$10.40 B3	\$9.10 B3	
	Worcester, Mass.									6.70 A5			
	Trenton, N. J.												
-	Alton, Itl.									6.60 L1			
	Ashland, Ky.	5.10 .47		6.875 A7	6.775 A7		7.525 A7						
	Canton-Massillon, Dover, Ohio			6.875 RI, R3									
	Chicago, Jolist, III.	5.10 W8, Al					7.525 UI, W8			6.40 A5, R3,W8			
	Sterling, Ill.									6.50 N4. K2			
	Cleveland, Ohio	5.10 R3,	6.275 R3,	7.65 R3*	6.775 R3		7.525 R3,	9.275 R3,		6.40 //5			
	Detroit, Mich.	5.10 G3,	6.275 G3,	1.65 10	6.11310		7.525 G3	9.275 G3					
		M2	M2										
	Newport, Ky.	5.10 49	6.275 A9										
WEST	Gary, Ind. Harber, Indiana	5.10 UI, 13, YI	6.275 UI, 13, YI	6.875 UI, 13	6.775 UI, 13, YI	7.225 UI	7.525 UI, YI,I3	9.275 UI, YI		6.40 Y/	\$10.40 UI, YI	\$9.10 /3, UI, YI	7.85 UI, YI
MIDDLE	Granite City, Ill.	5.20 G2	6.375 G2	6.975 G2	6.875 G2							\$9.20 G2	7.95 G2
1	Kokomo, Ind.			6.975 C9						6.50 C9			
2	Mansfield, Ohio	5.10 E2	6.275 E2			7.225 E2							
	Middletown, Ohio		6.275 A7	6.875 A7	6.77\$ A7	7.225 A7							
	Niles, Warren, Ohio Sharen, Pa.	\$.10 R3, S1	6.275 R3	6.875 R3 7.65 R3*	6.775 SI	7.225 SI*, R3	7.525 R3, SI	9.275 R3,				\$9.10 R3	
	Pittsburgh, Midland, Butter, Donora, Allquippa, McKeesport, Pa.	\$.10 UI, J3,P6	6.275 UI, J3,P6	6.875 UI, J3 7.50 E3*	6.775 UI		7.525 UI, J3	9.275 UI, J3	10.025 UI, J3	6.40 A5, J3,P6	\$10.40 UI, J3	\$9.10 UI, J3	7.85 U1, J3
	Portsmouth, Ohio	5.10 P7	6.275 P7		7-					6.40 P7			
	Weirton, Wheeling, Follanshee, W. Va.	5.10 W3, W5	6.275 W3, F3,W5	6.875 W3, W5 7.50 W3°		7.225 W3, W5	7.525 W3	9.275 W3			\$10.40 W5, W3	\$9.10 W5," W3	7.85 W5
	Youngstown, Ohio	5.10 UI, YI	6.275 Y/	7.50 /3*	6.775 Y/		7.525 YI	9.275 Y/		6.40 Y/			
	Fontana, Cal.	5.825 K1	7.40 KI				8.25 KI	10.40 KI			\$11.05 K/	\$9.75 KI	
	Geneva, Utah	5.20 C7											
_	Kansas City, Mo.									6.65.S2			
WEST	Los Angeles, Torranco, Cal.									7.20 B2			
	Minnequa, Colo.									6.65 C6			
	San Francisco, Nilea Pittaburg, Cal.	5.80 C7	7.225 C7	7.625 C7						7.29 C7	\$11.09 C7	\$9.75 C7	
T	Atlanta, Ga.												
SOUTH	Fairfield, Ala. Alabama City, Ala.	5.10 T2, RS	6.275 T2, R3	6.875 TZ, R3	6.775 72					6.40 T2,R3	\$10.50 T2	\$0.20 T2	
	Houston, Texas									6.65 52		1	1

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

SHEETS

WIRE ROD

TINPLATE

IRON AGE

STEEL

<sup>\*</sup> Electrogalvanized sheets.

	RON AGE			BA	RS				PLAT	TES		WIRE
	STEEL	1		- DA		1 1			1 200			WIKE
ı	PRICES	Carbon† Steel	Reinforc- ing	Cold Finished	Alloy Flot- rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Lew Alley	Mír'a. Bright
	Bethlehem, Pa.				6.725 B3	9.025 B3	8.30 B3					
	Buffalo, N. Y.	5.675 R3,B3	5.675 R3,B3	7.70 B5	6.725 B3,R3	9.025 B3,B5	8.30 B3	5.30 B3				8.00 IV6
	Claymont, Del.							5.30 C4		7.50 C4	7.95 C4	
	Contasville, Pa.							5.30 L4		7.50 L4	7.95 L4	
	Conshohocken, Pa.							5.30 A2	6.375 A2	7.50 A2	7.95 A2	
	Harrisburg, Pa.							5.30 P2	6.375 P2			
	Milton, Pa.	5.825 M7	5.825 M7									
	Hartford, Conn.			8.15 R3		9.325 R3						
LAST	Johnstown, Pa.	5.675 B3	5.675 B3		6.725 B3		8.30 B3	5.30 B3		7.50 B3	7.95 B3	8.00 B3
2	Fairless, Pa.	5.825 UI	5.825 UI		6.875 UI							
	Newark, Camden, N. J.			8.10 W10, P10		9.20 W10, P10						
	Bridgeport, Putnam, Willimantic, Conn.			8.20 W/0 8.15 J3	6.80 N8	9.175 N8						
	Sparrows Pt., Md.		5.675 B3					5.30 B3		7.50 B3	7.95 B3	8.10 B3
	Palmer, Worcester, Readville, Mansfield, Mass.			8.28 B5, C14		9.325 A5,B5						8.30 A5, W6
	Spring City, Pa.			8.10 K4		9.20 K4					-	
_	Alton, Ill.	5.875 <i>L1</i>			-							8.20 L/
	Ashland, Newport, Ky.							5.30 A7, A9	-	7.50 A9	7.95 A7	
	Canton, Massillon, Mansfield, Ohio	6.15* R3		7.65 R3,R2	6.725 R3 6.475 T5	9.025 R3,R2 8.775 T5		5.30 E2				
	Chicago, Joliet, Waukegan, Madison, Harvey, III.	5.675 U1, R3, W8, N4, P13	5.675 U1,R3, N4,P13,W8 5.875LI	7.65 A5, W10,W8, B5,L2,N9	6.725 UI,R3, W8	9.025 A5, W10,W8, L2,N8,B5	8.30 UI,W8, R3	5.30 UI, AI, W8, I3	6.375 UI	7.50 UI, W8	7.95 UI, W8	8.00 A5./ W8,N4 K2,W/
	Cleveland, Elyria, Ohio	5.675 R3	5.675 R3	7.65 A5,C13, C18		9.825 A5, C13,C18	8.30 R3	5.30 R3, J3	6.375 J3		7.95 R3, J3	8.00 A5 C13,C13
	Detroit, Mich.	5.675 G3	5.675 G3	7.90 P3 7.85 P8,B5 7.65 R5	6.725 R5,G3	9.825 R5 9.225 B5,P3, P8	8.30 G3 ·	5.30 G3		7.50 G3	7.95 G3	
	Duluth, Minn.											8.00 A5
WEST	Gary, Ind. Harbor, Crawfordsville, Hammond, Ind.	5.675 U1,13, Y1	\$ 675 U1,13, Y1	7.65 R3,J3	6.725 UI, I3, YI	9.025 R3,M4	8.30 UI, YI	5.30 U1,13, Y1	6.375 <i>J</i> 3,	7.50 UI, YI	7.95 UI, YI, I3	8.10 M4
H	Granite City, Ill.							5.40 G2			<u> </u>	
MIDDLE	Kokomo, Ind.		5.775 C9									8.10 C9
2	Starling, Ill.	5.775 N4	5.775 N4					5.30 N4				8.10 K2
	Niles, Warren, Ohio Sharen, Pa.			7.65 C10	6.725 CIO,	9.025 CIO		5.30 R3,S1		7.50 SI	7.95 R3, SI	
	Owensboro, Ky.	5.675 G5			6.725 G5							
	Pittsburgh, Midland, Donera, Aliquippa, Pa.	5.675 U1, J3	5.675 U1, J3	7.65 A5,B4, R3,J3,C11, W10,S9,C8, M9	6.725 UI, J3, CII, B7	9.025 A5, W10,R3,S9, C11,C8,M9	8.30 U1,J3	5.30 U1, J3	6.375 UI.J3	7.50 U1, J3,B7	7.95 U1. J3,B7	8.00 A5, J3,P6
	Pertamouth, Ohio								-			8.00 P7
								5.30 W5				
	Weirton, Wheeling, Follanshee, W. Va. Youngstown, Ohio	\$.675 UI,R3,	5.675 UI,R3,	7.65 AI, YI,	6.725 UI, YI	9.625 YI,F2	8.30 UI, YI	5.30 UI.		7.50 YI	7.95 UI, YI	8.00 Y/
_	Emeryville, Fontana, Cal.	6.425 /5 6.375 K/	6.425 JS 6.375 KJ	F2	7.775 KI		9.60 K1	R3, Y1		8.30 KI	8.75 <i>K1</i>	
		6.375 K1	6.315 K1			-		Ess Ci	-		745 (7)	
	Genera, Utah	EASE CO.	East C1		E 475 51		8.55 S2	5.30 C7			7.95 C7	9.95 55
	Kansas City, Me.	5.925 S2	5.925 S2	0.10 P2 D14	6.975.52 7.775 B2	11 00 DI4	8.55 SZ 8.625 BZ					8.25 S2
WEST	Los Angeles, Terrance, Cal.	6.375 C7,B2 6.125 C6	6.375 C7,B2	9.10 R3,P14, S12	1.113 82	11.00 PI4, SI2	0.013 81	6.15 C6				8.95 B2 8.25 C6
	Minnequa, Colo.	6.425 O2	6.425 02					6.13 C8	-		-	9.40 CD
	Portland, Ore.	6.425 02 6.375 C7	6.425 02 6.375 C7				8.675 B2					805 (7)
	San Francisco, Niles, Pittsburg, Cal.	6.425 B2	6.425 B2									8.95 C7,C
	Seattle, Wash.	6.425 B2,N6, A10	6.425 B2,A16				8.675 B2	6.20 B2	•	8.40 B2	8.85 B2	
	Atlants, Ga.	5.875 A8	5.675 A8									8.00 A8
SOUTH	Fairfield City, Ala. Birmingham, Ala.	5.675 T2,R3, C16	5.675 T2,R3, C16	8.25 C/6			8.30 TZ	5.30 T2,R3			7.95 T2	8.00 T2,1
90	Houston, Ft. Worth, Lone Star, Texas	5.925 S2	5.925 S2		6.975 S2		8.55 S2	5.40 SZ		7.60 SZ	8.05 S2	8.25 52

#### STEEL PRICES

#### **Key to Steel Producers**

#### With Principal Offices

- Al Acme Steel Co., Chicago
- Alan Wood Steel Co., Conshohocken, Pa. A2
- Allegheny Ludlum Steel Corp., Pittsburgh
- American Cladmetals Co., Carnegie, Pa.
- 45 American Steel & Wire Div., Cleveland
- A6 Angel Nail & Chaplet Co., Cleveland
- Armco Steel Corp., Middletown, Ohio 47
- Atlantic Steel Co., Atlanta, Ca. 49 Acme-Newport Steel Co., Newport, Ky.
- A10 Alaska Steel Mills, Inc., Seattle, Wash.
- Babcock & Wilcox Tube Div., Beaver Falls, Pa.
- B2 Bethlehem Steel Co., Pacific Coast Div. R3
- Bethlehem Steel Co., Bethlehem, Pa. R4
- Blair Strip Steel Co., New Castle, Pa. B5
- Bliss & Laughlin, Inc., Harvey, Ill. B6
- Brook Plant, Wickwire-Spencer Steel Div., Birdsboro, Pa.
- R7 A. M. Byers, Pittsburgh
- B8 Braeburn Alloy Steel Corp., Braeburn, Pa.
- C1 Calstrip Steel Corp., Los Angeles
  C2 Carpenter Steel Co., Reading, Pa.
- C# Claymont Products Dept., Claymont, Del.
- Ci Colorado Fuel & Iron Corp., Denver
- C7 Columbia Geneva Steel Div., San Francisco
- C8 Columbia Steel & Shafting Co., Pittsburgh
- C9 Continental Steel Corp., Kokomo, Ind.
- C10 Copperweld Steel Co., Pittsburgh, Pa.
- CII Crucible Steel Co. of America, Pittsburgh
- C13 Cuyahoga Steel & Wire Co., Cleveland C14 Compressed Steel Shafting Co., Readville, Mass.
- C15 G. O. Carlson, Inc., Thorndale, Pa.
- C16 Connors Steel Div., Birmingham
- C18 Cold Drawn Steel Plant, Western Automatic Machine Screw Co., Elyria, O.
- DI Detroit Steel Corp., Detroit
- D? Driver, Wilbur B., Co., Newark, N. J.
- D3 Driver Harris Co., Harrison, N. J.
- D4 Dickson Weatherproof Nail Co., Evanston, Ill.
- El Eastern Stainless Steel Corp., Baltimore
- E2 Empire-Reeves Steel Corp., Mansfield, O.
- E3 Enamel Products & Plating Co., McKeesport, Pa.
- F1 Firth Sterling, Inc., McKeesport, Pa.
- Fitzsimons Steel Corp., Youngstown
- F3 Follansbee Steel Corp., Follansbee, W. Va.

- G2 Granite City Steel Co., Granite City, Ill.
- G3 Great Lakes Steel Corp., Detroit
- Greer Steel Co., Dover, O. G4
- G5 Green River Steel Corp., Owenboro, Ky.
- HI Hanna Furnace Corp., Detroit
- 12 Ingersoll Steel Div., New Castle, Ind.
- 13 Inland Steel Co., Chicago, Ill.
- 14 Interlake Iron Corp., Cleveland
- J1 Jackson Iron & Steel Co., Jackson, O.
- J2 Jessop Steel Corp., Washington, Pa. 13
- Jones & Laughlin Steel Corp., Pittsburgh Joslyn Mfg. & Supply Co., Chicago
- J5 Judson Steel Corp., Emeryville, Calif.
- KI Kaiser Steel Corp., Fontana, Calif.
- K2 Keystone Steel & Wire Co., Peoria K4 Keystone Drawn Steel Co., Spring City, Pa.
- L1 Laclede Steel Co., St. Louis
- L2 La Salle Steel Co., Chicago
- L3 Lone Star Steel Co., Dallas
- L4 Lukens Steel Co., Coatesville, Pa.
- MI Mahoning Valley Steel Co., Niles, O.
- M2 McLouth Steel Corp., Detroit
- MI Mercer Tube & Míg. Co., Sharon, Pa.
- M# Mid States Steel & Wire Co., Crawfordsville, Ind.
- M6 Mystic Iron Works, Everett, Mass.
- M7 Milton Steel Products Div., Milton, Pa.
- MI Mill Strip Products Co., Chicago, Ill.
- M9 Moltrup Steel Products Co., Beaver Falls, Pa.
- NI National Supply Co., Pittsburgh
- N2 National Tube Div., Pittsburgh N4 Northwestern Steel & Wire Co., Sterling, III.
- No Northwest Steel Rolling Mills, Seattle
- N7 Newman Crosby Steel Co., Pawtucket, R. I.
- NII Carpenter Steel of New England, Inc., Bridgeport, Conn.
- Nº9 Nelson Steel & Wire Co.
- 01 Oliver Iron & Steel Co., Pittsburgh
- 02 Oregon Steel Mills, Portland
- PI Page Steel & Wire Div., Monessen, Pa.
- P2 Phoenix Steel Corp., Phoenixville, Pa.
  P3 Pilgrim Drawn Steel Div., Plymouth, Mich.
- P4 Pittsburgh Coke & Chemical Co., Pittsburgh
- P5 Pittsburgh Screw & Bolt Co., Pittsburgh
- P6 Pittsburgh Steel Co., Pittsburgh
- P7 Portsmouth Div., Detroit Steel Corp., Detroit
- W12 Wallace Barnes Steel Div., Bristol, Conn.

P9 Pacific States Steel Co., Niles, Cal.

P11 Production Steel Strip Corp., Detroit

P13 Phoenix Mfg. Co., Joliet, Ill. P14 Pacific Tube Co.

P15 Philadelphia Steel and Wire Corp.

R3 Republic Steel Corp., Cleveland

RI Rome Strip Steel Co., Rome, N. Y. S1 Sharon Steel Corp., Sharon Pa.S2 Sheffield Steel Div., Kansas City

S3 Shenango Furnace Co., Pittsburgh

Sweet's Steel Co., Williamsport, Pa.

Stanley Works, New Britain, Conn.

S11 Southern Electric Steel Co., Birmingham

S13 Seymour Mfg. Co., Seymour, Conn.

Thomas Strip Div., Warren, O.

Texas Steel Co., Fort Worth

Thompson Wire Co., Boston

Superior Drawn Steel Co., Monaca, Pa.

Superior Steel Div. of Copperweld Steel Co., Carnegie, Pa.
 S10 Seneca Steel Service, Buffalo

S12 Sierra Drawn Steel Corp., Los Angeles, Calif.

71 Tonawanda Iron Div., N. Tonawanda, N. Y.

Tennessee Products & Chem. Corp., Nashville

Tennessee Coal & Iron Div., Fairfield

Timken Steel & Tube Div., Canton, O.

UI United States Steel Corp., Pittsburgh
U2 Universal-Cyclops Steel Corp., Bridgeville, Pa.
U3 Ulbrich Stainleas Steels, Wallingford, Conn.
U4 U. S. Pipe & Foundry Co., Birmingham

WI Wallingford Steel Co., Wallingford, Con

W3 Weirton Steel Co., Weirton, W. Va. W4 Wheatland Tube Co., Wheatland, Pa.

W2 Washington Steel Corp., Washington, Pa.

W5 Wheeling Steel Corp., Wheeling, W. Va.

W6 Wickwire Spencer Steel Div., Buffalo

W8 Wisconsin Steel Div., S. Chicago, Ill.

W9 Woodward Iron Co., Woodward, Ala.

W7 Wilson Steel & Wire Co., Chicago.

W10 Wyckoff Steel Co., Pittsburgh

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T2

T4

TR

RI Reeves Steel & Mfg. Div., Dover, O.

RI Reliance Div., Eaton Mfg. Co., Massillon, O.

RI Roebling Sons Co., John A., Trenton, N. J.

Rodney Metals, Inc., New Bedford, Mass.

Simonds Saw and Steel Co., Fitchburg, Mass.

Jones & Laughlin Steel Corp., Stainless and Strip Div.

P10 Precision Drawn Steel Co., Camden, N. J.

- P8 Plymouth Steel Co., Detroit
- Y/ Youngstown Sheet & Tube Co., Youngstown, O.

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Stainless Type

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Bos Cle Se. Ens Fair Gas Hus Ind Joh Joh Mis Pitt Sea Ste-Stro Wil You

por Fre

PIPE AND TUBING

Base discounts (pct) f.o.b. mills. Base price about \$200 per not ton.

							BUTT	WELD										SEAM	LESS			
	1/2	In.	34	ln.	11	in.	11/4	in.	13/2	In.	2	ia.	21/2-1	3 la.	2	in.	21/2	In.	3 1	ln.	31/2	4 In.
STANDARD T. & C.	Bik.	Gal.	Bik.	Gal.	Blk.	Gal.	Bik.	Gal.	Bik.	Gal.	Blk.	Gal.	Blk.	Gal	Blk.	Gal.	Bik.	Gal.	Blk.	Gal.	Bik.	Gal.
Sparrows Pt. B3 Youngstown R3 Fontans K1	0.25 2.25 *10.75	*13.0	3.25 5.25 *7.75		6.75 8.75 *4.25	*6.50 *4.50 *17.50	9.25 11.25 *1.75	+5.75 +3.75 +16.75	9.75 11.75 +1.25		10.25 12.25 +0.75			+2.50								
Pittsburgh J3	2.25 0.25 2.25	*15.0 *13.0	5.25 3.25 5.25	*9.0 *11.0 *9.0	8.75 6.75 8.75	*4.50 *6.50 *4.50	11.25 9.25 11.25	+3.75 +5.75 +3.75	11.75 9.75 11.75	*2.75 *4.75 *2.75	12.25 10.25 12.25	*2.25 *4.25 *2.25	13.75 11.75 13.75	*4.50								
Fairless N2 Pittsburgh N1 Wheeling W5 Wheatland W4	0.25 2.25 2.25 2.25	*13.0 *13.0	3.25 5.25 5.25 5.25	*9.0	6.75 8.75 8.75 8.75	*6.50 *4.50 *4.50 *4.50	9.25 11.25 11.25	*5.75 *3.75 *3.75 *3.75	9.75 11.75 11.75	*4.75 *2.75 *2.75 *2.75	10.25 12.25 12.25 12.25	*4.25 *7.25 *2.25 *2.25	13.75	*4.50 *2.50 *2.50 *2.50	*12.25	+27.25	+5.75	+22.50	+3.25	*20.0	*1.75	*18.50
Youngstown YI. Indiana Harbor YI Lorain N2.	2.25 1.25 2.25	*13.0 *14.0	5.25 4.25 5.25	*10.0	8.75 7.75 8.75	*4.50 *5.50	11.25 10.25 11.25	*3.75 *4.75 *3.75	11.75 10.75 11.75	*2.75 *3.75	12.25	*2.25 *3.25	13.75 12.75	*2.50 *3.50					*3.25 *3.25			*18.50 *18.50
EXTRA STRONG PLAIN ENDS Sparrows Pt. B3	4.75	*9.0	8.75	+5.0	11.75	+0.50	12.25	*1.75	12.75	*0.75	13.25	*0.25	13.75	+1.50							*****	
Youngstown R3 Fairless N2 Fontana K1	6.75 4.75 *6.25	*9.0	10.75 8.75 +2.25	*3.0 *5.0	13.75 11.75 0.75	+0.50	14.25 12.25 1.25	0.25 +1.75	14.75 12.75 1.75	1.25	15.25 13.25 2.25	1.75	15.75 13.75 2.75	9.50			*****			*****	4.25	
Pittsburgh J3	6.75 4.75 6.75 6.75	*9.0 *7.0	8.75 10.75		13.75 11.75 13.75 13.75	1.50 *0.50 1.50	14.25 12.25 14.25	0.25	12.75	1.25	13.25	*0.25 1.75	13.75 15.75	*1.50 0.50		*****			*0.75			+11.50
Wheeling W5. Wheatland W4. Youngstown Y/.	6.75 6.75 6.75	*7.0 *7.0	10.75	*3.0	13.75	1.50 1.50 1.50	14.25 14.25 14.25 14.25	0.25	14.75	1.25 1.25 1.25 1.25	15.25	1.75	15.75 15.75	0.50 0.50 0.50					*0.75			*11.50
Indiana Harbor Y1 Lorain N2	5.75 6.75	*8.0	9.75	*4.0	12.75	0.50	13.25		13.75	0.25	14.25	0.75	14.75	*0.50 0.50								+11.50

Threads only, buttweld and seamless, 2½ pt. higher discount. Plain onds, buttweld and seamless, 3-in. and under, 5½ pt. higher discount. Galvanized discounts haved on sinc price range of over 9¢ to 11¢ per lb. East St. Louis. For each 2¢ change in zinc, discounts vary as follows: ½, ¾ and 1-in., 2 pc.; 1½, 1½ and 2-in., 1½, pt.; 2½ and 3-in., 1 pt., a.g., zinc price range of over 13¢ to 15¢ would lower discounts on 2½ and 3-in. pipe by 2 points; zinc price in range over 7¢ to 9¢ would increase discounts. East St. Louis zinc price new 11.00¢ per lb.

(Effective Oct. 5, 1959)

#### TOOL STEEL

F.o.b.	mill				-	
W	Cr	v	Mo	Co	per lb	SAE
18	4	1	_		\$1.84	T-1
18	4	1	-	5	2.545	T-4
18	4	2	-	_	2.005	T-2
1.5	4	1.5	8	-	1.20	M-1
6	4	3	6	_	1.59	M-3
6	4	2	5	-	1.345	M-2
High-	carbo	n chr	omiu	m	.955 D	
Oil ha	rden	ed ma	ngan	ese	.505	0-2
Specia					.38	W-1
Extra					.38	W-1
Regul					.325	W-1
					east of	Missis-
sissip	are 4	¢ per	lb h	gher.	West o	of Mis-

C	LAD STE	EL	Base pri	cos, cent	per lb f.o.b.
		Plate (	L4, C4,	43, J2)	Sheet (12)
-	Cladding	10 pct	15 pct	20 pct	20 pct
	302				37.50
	304	28.80	31.55	34.30	40.00
Type	316	42.20	46.25	50.25	58.75
-	321	34.50	37.75	41.05	47.25
Steinless	347	40.80	44.65	48.55	57.00
Ø.	405	24.60	26.90	29.25	
	410	22.70	24.85	27.00	****

CR Strip (S9) Copper, 10 pct, 2 sides, 42.50; 1 side, 35.85.

438...... 23.45 25.65 27.90

#### RAILS, TRACK SUPPLIES

F.o.b. Mill Conta Per Lb		Rails	_	Light Rails Joint Bars		Track Spikes		Tie Plates		Track Bolts Univested							
Bessemer UI	5.	75	6	7	25	7.	2	5	l.,								
Classiand #3															9.6		98
Sa. Chicago R3		***	1.	• •					1	ì.	10				١.,	-	
So. Chicago R3 Enaley T2 Fairfield T2 Gary U1	8	75	ė	7	95	* '		* *		*		*	* *				
Fairfield 72			6	7	25	*			94		10	à	ė	75	× .		
Care III	è.	75						* *	100			2	-	75			**
Huntington, C/6	0.	10	6	-				* *			* *		. 0	13			
rountington, C/D			ĮΦ.		40					. *					١.,		* *
Ind. Harbor 13			14					4.6	ш	١.	18	×		* *			
Johnstown B3	1		6	, 7	25	1	. :	20						* *			
Joliet UI			١.			7.	, 2	5			* *						
Kansas City S2 Lackawanna B3									110	D.	10				11	5.	35
Lackawanna B3	5.	75	6	.7	25	7	. 2	:5	1.			6	.8	75			
Lebanon B3	1					7	. 2	5	1.						11	\$.	35
Minnegus C6	15.	75	17	. 2	25	7	. 2	5	110	D.	10	6	. 8	75	1	5.	35
Pittsburgh P5 Pittsburgh J3			10			ľ			1			-			1	ä.	75
Pittshurgh /3	1		T.	•		1			190		10	1.			١-	••	
Seattle B2	1.		1.	* *		1			10		**	è	7	Ė.	10	Ė.	ėĖ
Steelton B3	1	95	1.		* *	è	4	100				-	1	75	1		04
Struthers Y1		. 10			**	10	• 4	19	16		11		. 0	49		* *	
Struthers 11	1			**	* *		* *	**	121	в.	10	15	× ×	ė.		* *	
Terrance C7	8.1		اذ	* 2							* *		. 6	9	1-		**
Williamsport S5 Youngstown R3				. 7	25				1:			×	٠.				
Toungstown RJ	0.1		1.	0 1			0.0		13	ŋ,	10		* *			* *	

#### COKE

	et-Tor
Connellsville, Pa \$14.50 to	\$15.50
Foundry, beehive (f.o.b.)	\$18.50
Foundry oven coke	*
Buffalo, del'd	\$33.25
Detroit f.o.b.	
New England, del'd	33.55
New Haven, f.o.b.	31.00
Kearney, N. J., f.o.b	31.25
Philadelphia, f.o.b.	31.00
Swedeland, Pa., f.o.b.	31.00
Painesville, Ohio, f.o.b.	
Erie, Pa., f.o.b.	32.00
Cleveland, del'd	34.19
Cincinnati della	. 32.84
Cincinnati, del'd	
St. Paul, f.o.b.	. 31.25
St. Louis, f.o.b.	. 33.00
Birmingham, f.o.b.	. 30.35
Milwaukee, f.o.b.	. 32.00
Neville Is., Pa	. 39.75

#### LAKE SUPERIOR ORES

ports.	Inte	erim ;	price	83	fe	7	11	14	9	er Lake season, account. tross Ton
Openhe	arth	lump								312.70
										11.88
Old rar Mesabi.										
Mesabi,										
High n										

#### **ELECTRICAL SHEETS**

22-Gage	Hot-Rolled	Cold-R (Coiled or C	
F.o.b. Mill Cents Per Lb	(Cut Lengths)*	Semi- Processed	Fully Processed
Field	11.70 12.40	9.875 11.20 11.90	11.70 12.40
Special Motor Motor Dynamo	14.65	12.475 13.05 14.15	13.55 14.65
Trans. 65	15.78 16.30	15.20 Grain (	) 15.70 Oriented
Trans. 58 Trans. 52	16.80 17.85	Trans. 88 Trans. 73 Trans. 66	20.20

Producing points: Aliquippa (J3); Beech Bottom (W5); Brackenridge (A3); Granite City (G2); Indiana Harber (J3); Mansfield (E2); Newport, Ky. (A9); Niles, O. (S1); Vandergrift (UI); Warren, O. (R3); Zanesville, Butler (A7).

#### **ELECTRODES**

Cents per lb. f.o.b. plant, threaded, with nipples, unboxed.

(	RAPHITE	3	CARBON*					
Diam. (In.)	Longth (In.)	Price	Diam. (In.)	Length (In.)	Price			
24 20 18 14 12 10 10 7 6 4 3 21/2	84 72 72 72 72 72 60 48 60 40 40 40 40 24	27.25 26.50 27.50 27.25 28.25 28.25 29.50 30.00 29.75 33.25 37.00 39.25 41.50 64.00	40 35 30 24 20 17 14 10 8	100, 110 110 110 72 90 72 72 72 72 69 69	12.50 11.20 11.70 11.95 11.55 12.10 12.55 13.80 14.25			

#### • Prices shown cover carbon nipples.

#### REFRACTORIES

#### Fire Clay Brick

Super duty, Mo., Pa., Md., Ky \$185.00
High duty (except Salina, Pa.,
add \$5.00) 140.00
Medium duty 125.00
Low duty (except Salina, Pa.,
add \$2.00) 103.00
Ground fire clay, net ton, bulk 22.50
Silica Brick
Mt. Union, Pa., Ensley, Ala \$158.00
Childs, Hays, Latrobe, Pa 163.00
Chicago District 168.00
Western Utah 183.00
California 165.00
Super Duty
Have Pa Athens Tex Wind-

Carloads per 1888

ham, Warren, O., Morrisville	
163.00	168.00
Silica cement, net ton, bulk, Latrobe Silica cement, net ton, bulk, Chi-	29.75
cago	26.75
ley, Ala bulk. Mt. Silica cement, net ton, bulk. Mt.	27.75
Union Silica cement, net ton, bulk, Utah	25.75
and Calif.	39.00

Chrome Brick	Per net ton
Standard chemically bond Standard chemically bond	
iner, Calif	119.00
Burned, Balt	103.00
Magnesite Reick	

Chemicall	y bonded	, Bal	tim	ore			119.00
Grain Ma	gnesite	St.	96	to	34.	-in.	grains
Domestic,	f.o.b. B	altim	ore	in	bi	ulk.	

Luning, Nev.	unn.,	
in bulkin sacks		
		net ton
F.o.b. bulk, producing points Pa., W. Va., Ohlo		\$16.75
Missouri Valley		15.60 17.00

(Effective Oct. 5, 1959)

#### MERCHANT WIRE PRODUCTS

	Standard Q Coated Nails	Weven Wire Feace	"T" Fence Posts	Single Loop Bale Ties	Galv. Barbed and Twisted Barbless Wire	Merch. Wire Ann'ld	Merch. Wire Galv.
F.o.b. Mill	Col	Col	Col	Col	Col	¢/lb.	¢/lb.
Alabama City R3 Aliquippa J3***. Atlanta A8** Bartonville K2**. Buffale W6 Chicago N4**. Chicago R3 Cleveland A6 Cleveland A5	173 175 175 175		178		190 198 198	8,75 9,10 9,00 9,00 9,00	9.675 9.425 9.775 9.55* 9.70 9.55
Crawf'dav. M4** Donora, Pa. A5 Duluth A5 Fairfield, Ala. T2 Galveston D4	175 173 173 173 9.10;	192 187 187 187		214 212 212 212 212	198 193 193 193	9.10 9.00 9.00 9.00	9.775 9.55 9.55 9.55 9.55
Houston S2 Jacksonville M4. Johnstown B3**, Joliet, Ill. A5 Kekomo C9 L. Angeles B2***	184-1 173	192 197 190 187 189	17.	219	198 203 196 193 195*	9.10 9.00 9.00 9.10	9.80† 9.775 9.675 9.55 9.65° 10.625
Kansas City S2*. Minnequa C6 Monessen P6 Palmer, Mass. W6 Pittsburg, Cal. C7	178				198° 198† 193	9.25 9.25 8.65 9.30	9.80† 9.80† 9.325 9.85° 10.15
Rankin, Pa. A5 So. Chicago R3 S. San Fran. C6 Sparrowa Pt. B3** Struthers, O. Y1*	173 173	187		236 214	193 193 198	9.00 8.65 9.95 9.10	9.55 9.20 10.50† 9.775
	179					9.30	9.85

\* Zinc less than .10¢. \*\*\* .10¢ zinc. \* 11-12¢ zinc. † Plus zinc extras. ‡ Wholesalers only.

#### C-R SPRING STEEL

		CARBON CONTEN										
Cents Per Lb F.e.b. Mill		0.41- 0.60		0.81- 1.05	1.06-							
Anderson, Ind. G4		10.40		15.60	18.55							
Baltimore, Md. 78		10.70		15,90	18.85							
Bristol, Conn. W12		10.70	12,90	16.10								
Besten 78			12.90									
Buffalo, N. Y. R7			12.60									
Carnegie, Pa. 59		10.40		15,60								
Chicago				15.60	*****							
Cleveland A5			12.68	15, 60								
Dearborn S1			12.70									
Detroit D1			12.70	15.70								
Detroit D2			12.70									
Dover, O. G4	8.95		12.60		18.50							
Evanston, Ill. M8			12.60	******								
Franklin Park, Ill. 78			12.60		18.55							
Harrison, N. J. CII.			12.90	16, 10	19.36							
Indianapolis R5			12.60									
Los Angeles C1			14.80		*****							
New Britain, Conn. S			12.90		18.85							
New Castle, Pa. B4.			12.60									
New Haven, Conn. D			12.90									
Pawtucket, R. I. N7.			12.98									
Riverdale, Ill. Al			12.60									
Sharon, Pa. S1			12.60									
Trenton, R4			12.90									
Wallingford W1			12.90									
Warren, Ohio T4			12.60									
Worcester, Mass. At			12.90									
Youngstown R5	9.10	0 10.5	5 12.66	15.60	18.5							

#### DOLLED THREE

\$ per 100 ft, carlead lets	Si	Te .	Sean	Elec. Weld		
cut 10 to 24 ft. F.o.b. Mill	OD- B.W. H.R. C.I.  II. 2 13 40.28 47 2 12 54.23 63 3 12 62.62 73 3 1/2 11 73.11 85 4 10 97.68 11 0 97.68 11 2 13 40.28 47 2 1/2 12 54.23 63 3 12 62.62 73	C.D.	H.R.			
Babcock & Wilcox	3	12 12 11	54.23 62.62 73.11	73.48 85.79	35, 74 48, 13 55, 59 65, 84 88, 10	
National Tube	3	12 12 11	54.23 62.62 73.11	63.57 73.40 85.70	35.74 48.13 55.59 65.84 88.16	
Pittsburgh Steel	2 21/2 3 31/2 4	13 12 12 12 11 10	49.28 54.23 62.62 73.11 97.08	63.57 73.40 85.70		

#### **METAL POWDERS**

Cents per lb, minimum truckload, delivered E. of Miss. River, unless otherwise noted.

#### Iron Powders

Compacting Powders

Electrolytic, imported,	
f.o.b29.50	to 33.00
Electrolytic, domestic	34.50
Sponge	11.25
Atomized	11.25
Hydrogen Reduced 11.25	
Carbonyl	88.00
Welding Powders*	8.10
Cutting and Scarfing Powders*	9.10

Cutting and Scaring Towders.	
Copper Powders         41.00           Electrolytic, domestic         40.50 to 45.00           Precipitated         40.50 to 45.00           Atomized         39.80 to 48.30           Hydrogen reduced, f.o.b.         43.25	
Bronze         47.20 to 51.50           Chronium, electrolytic         \$5.00           Lead         19.00           Manganese, f.o.b.         42.00           Molybdenum         \$3.60 to \$3.95           Nickel         \$1.05 to \$1.03           Nickel Silver         53.50           Nickel Silver         13.00           Solder         13.60           Stainless Steel         20.2           Stainless Steel         20.2           1.07         20.2	
Stainless Steel, 302.       \$1.07         Stainless Steel, 316.       \$1.26         Steel, atomized, prealloyed, 4600 series       14.00 plus metal value         Tin       14¢ plus metal value         Titanium, 99.25+%, per lb., f.o.b.       \$11.25         Tungsten       \$3.15 (nominal)	

<sup>.</sup> F.O.B., shipping point.

#### BOLTS, NUTS, RIVETS, SCREWS STEEL SERVICE CENTERS

(Base discount, f.o.b. mill)

Bolts	1-4 Con- tainers	Con- tainers	20,000 Lb.	40,000 Lb.
Machine				
%" and smaller x 3" and shorter %" diam. x 3" and	55	57	61	62
shorter	47	4936	54	85
%" thru 1" diam x 6" and shorter %" thru 1" diam. longer than 6" and	37	3934	45	46
11/4" and larger x all lengths Rolled thread, 1/4" and smaller x 3"	31	34	40	41
and shorter Carriage, lag, plow,	55	57	61	62
tap, blank, step, elevator and fitting up holts ½" and smaller x 6" and shorter	48	503-6	85	56

Note: Add	25 pct	for	less	than	COL	taine	r qu	antity.	
Distributor	perces	0.90	5 pe	& Loon	on	India	and	0011090	make

Nuts,	Hex,	HP	reg.	&	hvy	٧.			case or
% in. % in. 1 % in	or sr to 1 %	nalle in.	inch	usiv	е.		 	 	62 56 51 1/2
C. P.									
% in.	to 1	nalle 1/2 in	inc	lusi	ve			 * *	62 56

Hot Galv. Hex Nuts (All Types) % in. and smaller	41
Semi-finished Hex Nuts	
% in. or smaller	62 56
(Add 25 pet for broken case or quantities)	

Fig	nish	ed										
%	in.	and	smaller	0		•	•					65

Rivets	Base per 100 lb
1/2 in. and larger	Pet. Off List
7/16 in. and smaller	15

Cap Scr	ews	Disc	ount	(Pack	ages)
Marr at d	Full	Finished	H. C.	Heat	Treat
New std.	nex ne	ad, pack-		II Case	

6" and shorter	54	42	
%", %", and 1" diam. x 6" and shorter %" diam. and smaller x	38	23	
longer than 6"			
longer than 6"	Fu	1018 Steel ll-Finished rtons Bulk	
"4" through %" dia. x 6" and shorter	59	48	
and shorter	" thi	rough %"	
2,000 pieces.			

#### Machine Screws & Stove Bolts

		Disco	ount
Plain Finish Cartons Bulk	n	Mach. Screws 60	Stove Bolts
	Quantity		
To ¼" diam. incl.	25,000-and over	r 60	
5/16 to ¼" diam. incl.	15,000-200,000	60	

#### Machine Screws & Stove Bolt Nuts

		Discount			
In Cartons	Quantity	Hex 16	Squar 19		
In Bulk diam. & smaller	25,000-and over	r 15	16		

#### **ELECTROPLATING SUPPLIES**

Anodes

(Cents per lb, frt allowed in quantity)
Copper
Rolled elliptical, 18 in. or longer, 5000 lb lots
Brass, 80-20, ball anodes, 2000 lb or more
Zinc, ball anodes, 2000 lb lots 16.00 (for elliptical add 1¢ per lb) Nickel, 99 pct plus, rolled carton,
5000 lb
Tin, ball anodes \$1.05 per lb (approx.).

Chemicals	
(Cents per lb, f.o.b. shipping point	t)
Copper cyanide, 100 lb drum Copper sulphate, 100 lb bags, per	
cwt.	22.75
Nickel salts, single, 100 lb bags Nickel chloride, freight allowed,	
100 lb	45.00
N. Y., 200 lb drums	
Zinc cyanide, 100 lb Potassium cyanide, 100 lb drum	60.75
N. Y. Chromic acid, flake type, 10,000 lb	45.50
or more	30.44

#### CAST IRON WATER PIPE INDEX

CMOI	11	v	N		V.		٩		6	Ь	ø.		1	15				u,	PPA
Birming	har	n									0								125.8
New Yo	rk															0			138.5
Chicago						0		0 0			۰	0 1		. 0	0				140.9
San Fra	ane	ise	0-	L		A		0	0	0	*								148.€
Dec.	195	5.	2	a	lu	e.		0	1	3.5	18	1	Z	3	6	17		h	eavier
5 in. or	lan	ae	r.	1	be	īί	-	396	tel		8	pi	g	0	t	90	189	06	. Ex-
planatio	1. 20	23	. '	5	7.		8	€1	pt	t.		1		1	19	5	5		isaue
Source:	77.	Ř.	1	04	206		a	no	ı	F	70	111	N	d	9"1	4	0	o.	

#### Matropolitan Price, dollars per 100 lb.

STEEL SERVICE CENTERS								Metropolitan Price, dollars per 100 lb.					
Cities		Sheets		Strip	Plates	Shapes	Ba	PB		Alloy	Bars		
City Delivery; Charge	Hot-Rolled (18 ga. & hvr.)	Cold-Rolled (15 gage)	Galvanized (10 gage)††	Hot-Rolled		Standard	Hat-Relled (merchant)	Cold- Finished	Het-Rolled 4615 As rolled	Het-Rolled 4140 Annealed	Celd-Drawn 4615 As rolled	Cold-Drawn 4140 Anneeled	
Atlanta	8.59	9.87	10.13	8.91	9.29	9.40	9.39	13.24		******		******	
Baltimore\$.10	8.65	9.35	9.09	9.15	9.10	9.65	9.55	11.80	16.28	15.28	19.82	19.08	
Birmingham	8.18	9.45	10.46	8.51	8.89	9.60	8.99						
Boston**	10.52	11.27	11.82	12.17	10.42	10.72	10.34	13.45	17.69	16.69	21.79	21.04	
Buffalo**	9.80	10.50	11.35	11.30	10.25	10.40	9.90	11.60	17.45	16.45	21.55	20.80	
Chicago**15	8.69	10.35	11.05	10.35	8.62	9.16	8.79	10.80	17.10	16.10	19.70	20.45	
Cincinnati**15	8.86	10.41	11.10	10.67	9.00	9.84	9.11	11.68	17.42	16.42	21.52	29.77	
Cleveland** 15	8.691	9.89	11.62	10.47	8.88	9.67	8.90	11.40	17.21	16.21	21.31	20.56	
Denver	9.60	11.84	12.94	9.63	9.96	10.04	10.00	11.19				20.84	
Detreit**15	8.95	10.61	11.40	10.72	8.99	9.84	9.10	11.16	17.38	16.38	21.48	21.63	
Houston	8.10	8.60		8.15	8.45	8.05	8.10	11.60	16.20	15.25	19.65	18.95	
Kansas City15	9.02	10.27	11.37	9.33	9.71	9.82	9.81	10.22	16.87	15.87	20.37	19.62	
Los Angeles**	9.951	11.55	12.20	11.55	10.00	10.00	9.10	14.20	18.30	16.45	21.30	20.86	
Memphis15	8.55	9.80		8.60	8.93	9.01	8.97	12.11		******			
Milwaukee**15	8.83	10.49	11.19	10.49	8.76	9.30	8.93	11.04	17.24	15.34	21.24	19.09	
New York** 10	10.52	10.59	11.40	12.14	10.77	10.84	10.09	13.35	17.50	16.50	21.60	20.85	
Norfolk20	8.20			8.90	8.65	9.20	8.90	10.70					
Philadelphia**10	9.55	10.10	10.71	11.75	10.15	10.20	9.50	12.05	17.48	16.48	21.58	20.83	
Pittsburgh**15	8.69	9.84	10.91	10.45	8.62	9.78	8.79	11.40	17.10	16.10	19.70	20.45	
Portland	10.00	11.75	13.30	11.95	11.50	11.10	9.85	15.30	18.50	17.45	29.75	20.25	
San Francisco** .10	11.00	11.952	11.50	12.25	11.00	10.95	10.75	15.20	18.30	16.35	22.90	20.60	
Seattle**	11.55		12.50	12.65	11.00		11.10	16.20	18.60	17.80	22.70	22.20	
Spekane**15		12.45	12.65	13.30	11.15		11.75	16.35	17.75	17.95	21.58	22.35	
St. Louis**15	9.07		11.02	10.73	9.80		9.17	11.43	17.48	16.48	20.08	19.33	
St. Paul15	8.94		10.47	8.99	9.45		9.70	11.49		15, 41		20.83	

Base Quantities (Standard unless otherwise keyed): Cold finished bars: 2000 lb or over. Alloy bars: 1000 to 1999 lb. All others: 2000 to 4999 lb. All HB products may be combined for quantity. All galvanized sheets may be combined for quantity. The sectiles are on net pricing. Prices shown are for 2000 lb item quantities of the following: Hot-rolled sheet—10 ga. x 36 x 36—120; Cold-rolled sheet—20 ga x 36 x 96—120; Galv. sheet—10 ga x 36—120; Eds-rolled strip—16 x 1 ; Plate—15 x 84"; Shape—1-Reams 6 x 12.5; Hot-rolled bar—Rounds—16; Cold-inities) bar—Cold-Bar—17 counds; Alloy bar—hat-rolled 4815—18, to 2%; cold drawn—15/16" to 2%; round; Hot-rolled 4140—16 to 2%; round; Tf 10¢ zinc. 2 Deduct for country delivery. 1 15 ga. & heavier; 2 14 ga. & lighter.

(Effective Oct. 5, 1959)

### This is a picture of

It's nothing you can use in your plant tomorrow — or even next year. But Allis-Chalmers is working on it *now* to meet the needs of industry in the future.

Fundamental research of materials, processes and equipment is an important part of the A-C contribution to industry. This enables product design engineers to make existing products even better, to create a continuous flow of new equipment, to help industry achieve new efficiencies and economies.

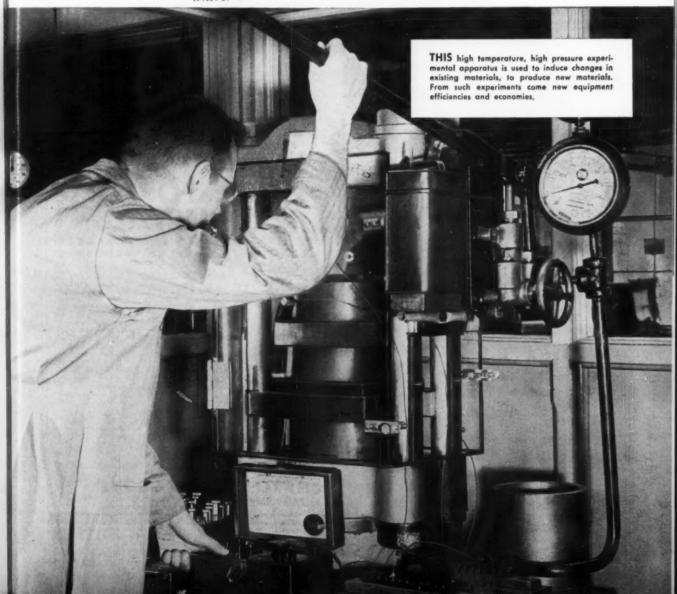
Research and development are only two reasons why A-C is recognized as a leader in supplying both electrical and mechanical equipment for industry. Single-source availability of "teamed" equipment, maximum engineering help and outstanding service facilities are others.

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Birdsbore, Pa. B6
Birmingham R3.
Birmingham W9.
Birmingham U4.
Buffalo R3.
Buffalo R4.
Buffalo W6.
Chester P2.
Chicage 14.
Cleveland R3.
Duloth 14.
Eries 14.
Eries 14.
Everett M6.
Everett M6.
Gensara, Utah C7.
Granite City C2.
Hubbard V1.
Irenton, Utah C7.

Irenton, Utah C7. Midland C/1

Minnequa C6, Monessen P6. Neville Is. P4

Mall. Bess

69.00 69.50

66.50 67.00 67.00 67.00 67.00 67.00 66.50 66.50 66.50 66.50 67.00 66.50 67.00 66.50 67.00 66.50 67.00 66.50 67.00 66.50 67.00 66.50

71.00

71.00

73.00

Fdry. Basic

68.00 62.00 62.00 62.00 66.00 66.00 66.00 66.00 66.00 66.00 66.00 67.50 75.00 66.00 67.90 68.50 62.50° 62.50° 62.50° 66.50 66.50 66.50 66.50 66.50 66.50 66.50 66.50 66.50 66.50 66.50

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69.00

Product	201	202	301	302	363	394	316	321	347	403	410	416	430
Ingots, reroll.	22.75	24.75	24.88	26.25	-	28.00	41.25	33.50	38.50	-	17.50	-	17.75
Slabs, billets	28.00	31.50	29.00	32.75	33.25	34.50	51.25	41.50	48.25	-	22.25	-	22.56
Billets, forging	-	37.75	38.75	39.50	42.50	42.00	64.50	48.75	\$7.75	29.25	29.25	29.75	29.75
Bars, struct.	43.50	44.50	46.00	46.75	49.75	49.50	75.75	57.50	67.25	35.00	35.00	35.50	35.50
Plates	39.25	40.00	41.25	42.25	45.00	45.75	71.75	54.75	64.75	30.00	30.00	31.25-	31.00
Sheets	48.50	49.25	51.25	52.00	56.75	55.00	80.75	05.50	79.25	40.25	40.25	31.75 48.25	49.75
Strip, bet-relled	36.00	39.00	37.25	40.50	-	44.25	69.25	53.50	63.50	-	31.00	-	32.00
itrip, cold-rolled	45.00	49.25	47.50	52.00	56.75	55.00	80.75	65.50	79.25	40.25	40.25	42.50	40.75
Wire CF; Red HR	-	42.25	43.50	44.25	47.25	47.00	71.75	54.50	63.75	33.25	33.25	33.75	33.75

STAINLESS STEEL PRODUCING POINTS:

Sheets: Midland, Pa., C11; Brackenridge, Pa., A3; Butler, Pa., A7; Vandergrift, Pa., 61; Washington, Pa., W2, J2; altimore, E1; Middletown, O., A7; Massillon, O., R3; Gary, U1; Bridgeville, Pa., U2; New Castle, Ind., I2; Detreit, M2; Baltimore, E1; Mis Louisville, O., R5.

Strip: Midland, Pa., C11; Waukegam, Cleveland, A5; Carnegie, Pa., S9; McKeesport, Pa., F1; Reading, Pa., C2; Washington, Pa., W2; W. Leechburg, Pa., A3; Bridgeville Pa., U2; Detroit, M2; Detroit, S1; Canton, Massillon, O., R3; Harrison, N. J., D3; Youngstown, R5; Sharon, Pa., S1; Butler, Pa., A7; Wallingford, Conn., U3 (plus further conversion extras); W1 (25¢ per lb. higher); Symmour, Conn., S13, (25¢ per lb. higher); New Bedford, Mass., R6 Gary, U1, (25¢ per lb. higher); Baltimore, Md., E1 (300 series only).

Bar: Baltimore, A7; S. Duqueme, Pa., U1; Munhall, Pa., U1; Reading, Pa., C2; Titusville, Pa., U2; Washington, Pa., J2; McKeesport, Pa., U1, Ff; Bridgeville, Pa., U2; Dunkirk, N. Y., A3; Massillon, O., R5; S. Chicago, U1; Syracuse, N. Y., C1!; Watervliet, N. Y., A3; Waukegan, A5; Canton, O., T3, R3; Ft. Wayne, 14; Detroit, R5; Gary, U1; Owensboro, Ky., G7; Bridgeport, Conn., N8; Ambridge, Pa., B7.

Wire: Waukegan, A5; Massillon, O., R3; McKeesport, Pa., F1; Ft. Wayne, J4; Newark, N. J. D2; Harrison, N. J., D3; Baltimore, A7; Dunkirk, A3; Monessen, P1; Syracuse, C11; Bridgeville, U2; Detroit, R5; Reading, Pa., C2; Bridgeport, Conn., N8.

Structurals: Baltimore, A7; Massillon, O., R3; Chicago, Ill., J4; Watervliet, N. Y., A3; Syracuse, C11; S. Chicago, U1.

Plates: Ambridge. Pa., B7; Baltimore, E1; Brackenridge, Pa., A3; Chicago, U1; Munhall, Pa., U1; Midland, Pa., C11; New Castle, Ind., I2; Middletown, A7; Washington, Pa., J2; Cleveland, Massillon, R3; Coatesville, Pa., C15; Vandergrift, Pa., U1; Gary, U1.

Forging billets: Ambridge, Pa., B7; Midland, Pa., C11; Balkimore, A7; Washington, Pa., J2; McKeesport, F1; Masaillon, Canton, O., R3; Watervliet, A3; Pittsburgh, Chicago, U1; Syracuse, C11; Detroit, R5; Munhall, Pa., S. Chicago, U1; Owensbore, Ky., G5; Bridgeport, Conn., N8; Reading, Pa., C2.

(Effective Oct. 5, 1959)

#### 67.80 67.50 67.00 67.00 67.00 69.50 67.00 09.50 66,50 67,00 66,50 66,50 69,00 66,50 69,00 66,50 Neville Is. P4 N. Tonawanda T/ Sharpeville S3 So. Chicago R3 So. Chicago W8 Swedeland A2 Toledo I4 Troy, N. T. R3 66.00 66.00 66.00 68.00 66-00 68.00 68.50 66.50 68.50 DIFFERENTIALS: Add, 75¢ per ton for each 0.25 pct silicen or portion thereof ever base (1.75 to 2.25 pct except low phon., 1.75 to 2.09 pct) 50¢ per ton for each 0.25 pct manganese or portion thereof ever 1 pct, \$2 per ton for 0.50 to 0.75 pct nickel, 31 for each additional 0.25 pct nickel, 31 for each additional 0.25 pct nickel. Add \$1.00 for 0.31-0.69 pct phos.

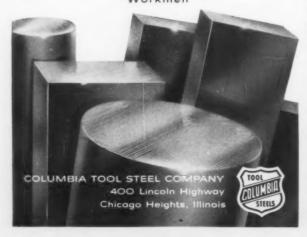
Add 31.00 for 0.31-0.00 pct phns.
Silvery Irum: Buffalo (6 pct), HJ, 379.25; Jackson JJ, 14
(Globe Div.), 378.00; Ningara Fallz (15.01-15.50), \$101.00;
Keokuk (14.01-14.50), \$103.50; (15.51-16.00), \$106.50,
Add \$1.00 per ton for each 0.50 pct silicon over base (6.01
to 6.50 pct) up to 18 pct. Add \$1.25 for each 0.50 pct mannane over 1.00 pct. Besserver silvery pig iron (under 1.10
pct phos.); \$64.00. Add \$1.00 premium for all grades
eitzerz to 18.00. pet phos.); \$64. silvery to 18 pct.

† Intermediate low phos.

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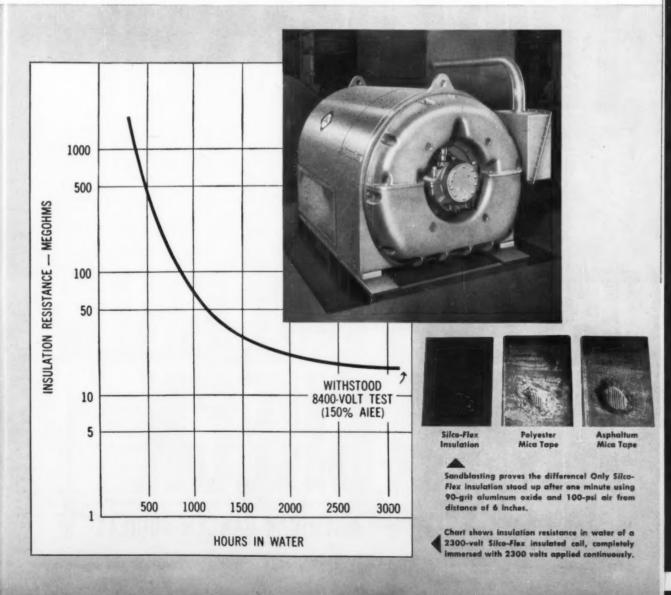
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The gas Air

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THE IRON AGE, October 8, 1959



### How Cooper-Bessemer is teaming up with Pratt & Whitney Aircraft to develop JET TURBINE POWER for industry

The cutaway model shown is a revolutionary new concept in gas turbines. The generating unit is a new Pratt & Whitney Aircraft jet engine-a modification of the famous J-57 aircraft engine, designed for gas fuel. The companion power unit is a new Cooper-Bessemer power turbine. This combination, now in the advanced experimental stages, represents the hottest development in industrial power in 20 years. It will mean drastic economies in installations of engine-driven compressors, generators and other rotating machinery.

For example, in gas compressor stations, it is expected to reduce total station cost by 50%!

Plans call for this new gas turbine to be available for broad application within 18 months. In the meantime, watch for reports on further developments in this pioneering teamwork by Cooper-Bessemer and Pratt & Whitney Aircraft.

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200	3000	Whse.	Rev.	600	600
1**	2200	Whse.	Vent.	600	92/132
1	1500	Whse.	Rev.	600	600
4 **	700	Whse.	Vent.	250	300/700
200	645	S.&S.	Rev.	300	1000
2	600	Al.Ch.	Mill	600	300/600
1	600	Whse.	Mill	250	110/220

			ING MO		
Qu.	H.P.	Make	Type	Volts	R.P.M.
1	2500	Al.Ch.	Mill	2200	296
1	1800	Whse.	Mill	2300	252
3	1500	G.E.	Mill 6600	/4160-V.	444
1	1000	Whse.	C.W.	2300	441
1	500	Ideal	8-4-20	4800	708
1	500	G.E.	MT-410	2200	585
1	500	Al.Ch.	ANY	2200	505
1	500	Al.Cb.	ANY	2200	293
1	400	Al.Ch.	ANY	2200	505
1	400	Whse.	C.W.	2200	200
1	350	G.E.	1-15M	2200	1180
1	350	G.E.	MT-412	2200	450
1	300	Whse.	CW-1012	2200	704
-					

#### SYNCHRONOUS MOTORS

	3	Phase—60	Cycle	
Qu.	H.P.	Make	Velts	R.P.M.
1	5600	Whse.	4760	1200
2	1400	Whse.	4160	450
1	960	G.E.	460	300
1	700	El. Mchy.	440	260
1	500	El. Mchy.	2300	720
1	450	Whse.	220	128
1	300	G.E.	2200	600
3	900	When	2.50	600

#### T. B. MAC CABE COMPANY

4302 Clarissa St., Philadelphia 40, Penna.

Coble Address "Macsteel" Philadelphia, Pa. Davenport 4-8300

#### THE CLEARING HOUSE

## **Used Machine Sales** High in California

The southern California used machinery market is the strongpoint in the West.

Dealers haven't felt the effects of the steel strike vet and business is plentiful.

 If you want to sell used machinery on the West Coast, zero in on the southern California market.

That's where business is best. And where the steel strike is felt the least. Dealers in other West Coast industrial centers - northern California and Seattle-report they're feeling the strike pinch.

Three Points-Here's why southern California continues to bustle with used machinery sales:

1: Steel warehouse stocks are at better than the national average.

2: Foreign steel imports pour into the region. Enough comes in to take care of a good bit of steel users' needs.

3: There's no letup in new and expanding metalworking plants.

Fast Pace-What used machinery is moving in southern California? Almost everything. But sheet metal equipment still heads the best seller list. And machines not older than 10 years, in good condition, find a buyer pretty fast.

Dealers are very active searching for equipment in eastern markets. While northern California used machinery business is holding up fine, dealers report they're feeling the steel strike. As one dealer puts it, "The little guys who are the best customers for used machinery couldn't stock up on steel and are

now running out. They just don't need tools when they've nothing to work."

Sheet metal equipment - shears, press brakes, and rolls-move better than milling machines and lathes, dealers say. Several dealers slated price boosts on new equipment for the end of September. This is stimulating business.

Few Imports-There's little importing from the East, dealers report. The prices there won't stand the extra cost of sending a man and then freighting the equipment back to San Francisco.

One dealer complains, "We're just starting to feel the steel strike pinch." Nevertheless, he says business so far this year is up sharply over last year. His backlog of orders was pretty good up until this month. Inquiries, he reports. slowed down somewhat from the faster pace of the pre-strike period. Right now, fewer inquiries are converted into orders.

Good used equipment is in best demand. "Junkers can't be given away." On some items, "good used" can mean as far back as 15 years, especially non-precision tools, another dealer points out.

Looking Ahead - There's a healthy tone of optimism in the San Francisco Bay Area's business. Reports of big industrial outlays point to a real upsurge once the strike

Used machinery in western Washington is moving at a snail's pace. And industry sources aren't happy over their prospects.

#### CONSIDER GOOD USED EQUIPMENT FIRST

BALER

Model 115P Logemann. Box 100" 1, 48" w, 24" d.

Bale size 24" x 14" x 16"

BENDER

No. 1 Pines Hydraulic, Capacity 1 x 16 Ga. Tube

BENDER

Ros. 12" x 14" x 16" yr.

12" x 3/16" Benderich Initial Type—New 1943

32" x 3" Baldwin Pyramid Type—New 1942

BRAKE—BOX & PAN

8" x ½" Dreis & Krump, 12" Finger Extension

BRAKES—PRESS TYPE

90 ton Niagara, Model 90-8-10

16" x 10 Ga. Clearing

GANNES—OVERHEAD ELECTRIC TRAVELING

5 ton P&H

90 ton Niagara, Model 90-8-10

10 ton Milwaukee

10 ton Milwaukee

10 ton Milwaukee

10 ton Milwaukee

10 ton Shaw

10 ton

130 ton Shepard Niles 77' Span 229/3/60 A.C. CUTOFF MACHINE
AC3 Yoder Cutoff with dies for %, %, %, %, %, 1.
1% and 1% tubing
DEGREASER
Detrex Yapor Degreaser 41'6"L, x 4'8"W x 8' Deep
Sill Gal Storage Tank, Detrex Solvent Still
DRAW BENCHES

7,000 lb. Draw Bench, 51 ft. Draw 10,000 lb. Draw Bench, 50 ft. Draw 30,000 lb. Draw Bench, 41 ft. Draw 35,000 lb. Draw Bench, 41 ft. Draw

FLANGING MACHINE

FORGING MACHINE
1" to 5" Acme, Ajax, National

HAMMERS—BOARD DROP—STEAM DROP—STEAM FORGING 800 lb to 12,000 lb. Incl. FORGING

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%" National D88D Header, with 1" National Hydr.

Straightener & #4 Ajax-Hogue Wire Drawer

LEVELER—ROLLERS

94 Torrington 9 Rolls 8" Dia.

60" Guide 17 Rolls 4½" Dia.

MULTI SLIDE MACHINE

No. 35 U. 8. Multi-Slide, Max width of stock 4½"

x. 989 thick, length of feed 12½"

Pullmax Model 2, Capacity 11/32"
PRESSES—HYDRAULIC
300 ton Southwark Platen 28" x 28", Stroke 25"
500 ton Watson Stillman Piercing Press, 48" x 72"
1000 ton Southwark Bed 44" x 54", Stroke 20"
4500 ton B-L-H Bed 68"x58", Stroke 40"

1000 ton D-L-B Det 0s x0s, struce 40

PUNCH & SHEAR COMBINATIONS

#245 Buffalo Ironworker

Cleveland Style W. 60" Throst. 312 Ton Capy. Complete with dishing att. punches, shear blades

#445 x 30 U. D. Buffalo Punch, Shear, Bar Cutter.

Punch 1½ x 1½; Shear 3" Rd., 2½ Sq., 6 x 6 x

USLING WILLS
34" x 7" Six Cluster Mill
10" x 14" Single Stand Two High
10" x 14" Single Stand Two High
13" x 16" Single Stand Two High
16" x 24" Two Stand Two High
26" x 60" Single Stand Two High
12" x 32" Birdsboro 3-Hi Bar Mill

Equipment

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2" x 40" Lewis 3-Hi Sheet Mill 2" x 84" Single Stand Three Hi 22" x 84" Single Stand Three High
ROLS—PLAYE STRAIGHTENING
TO SHEATE STRAIGHTENING
22" Hiller & Rolls 15" Dia. Backed-up
92" Hiller & Rolls 15" Dia. Backed-up
94" Hiller & Rolls 10" Dia.
Pels DT-36-B Armor Plate. Capy 15" brame &
channels, 6" x 6" x 5" x 5" angles
SHEAR—GATE
8" x 1" Cincinnati—LATE
SHEARS. MISC.
60" x 10 Ga. Cut-off Line

60" x 10 Ga. Cut-off Line 84" x 319" United Up-Cut, 50 H.P. A.C. Motor Drive SHEARS—ROTARY No. 524 Cut-off

SHEARS—ROTARY
No. 23A Quickwork Whiting 3/16 Capacity
No. 49A Quickwork Whiting 3/2" Capacity
SHEARS—SQUARING
6"x14\_Ga. Edwards, Motor Drive—LATE

United Niagara No. 910

SLITTERS
36" Waterbury Farrel, Slitting Line, Arbor 4½" Dia.
36" Wean Slitting Line, Arbor 5" Dia.
38" Wean Slitting Line, Arbor 5" Dia.
38" Arbor 15" Dia.
31" State Line, Li

SWAGING MACKIN, Cap., "4 to 2"2 Rd.

SWAGING MACKIN, Cap., "4 to 2"2 Rd.

2 10" Die Length, Hydraulic Feed

TESTING MACKINES

20,000 lb. Baldwin Univ. Hydraulic
50,000 lb. Riehle Broz. 2-Screw Universal
100,000 lb. Olsen, 4-Screw Beam Type Universal
200,000 lb. Olsen, 4-Screw Beam Type Universal
TUBE REDUCERS

14" Standard Tube Reducer
24", "Standard Tube Reducer
25", "Standard Tube Reducer
25", "Tube Reducer or Aluminum

A. T. HENRY & COMPANY, INC.

**Confidential Certified Appraisals** Liquidations - Bona Fide Auction Sales Arranged

Manufacturing

### BIG, MODERN SHEARS-BRAKES

500 TON #H-500-1C VERSON HYDR. PRESS BRAKE:

New 1957; 10'-¾" cap.; 10'-6" betw. hsgs.; 16' bed & ram; 10" shut height; 22" daylight; 12" stroke. With tooling for making pipe from 3" dia.-.120 thick to 10" dia.-.165 thick.

750 TON #400-10 CINC. PRESS BRAKE:

New 1945; 10'-6" betw. hsgs.; 14' bed & ram; 6" stroke; 16" shut height.

#10008 CINC. ALL STEEL POWER SHEAR:

8'-1" cap.; hydr. holddown; power back gauge; 24" gap.

#4308 CINC. ALL STEEL POWER SHEAR:

 $8'-\frac{1}{2}"$  cap.; hydr. holdown; power back gauge; 18" gap.

#2506 CINC. POWER SHEAR:

New 1949; 6'-1/2" cap.; 18" gap; hydr.

PHONE. WRITE OR WIRE

INTERSTATE MACHINERY CO., INC.

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1-24" x 36" 1-22" x 36"

Each with A.C. motor, gear reducer, pinion stand and forged steel rolls. Roller conveyor system for slabs and coils.

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ATlantic 1-2780

Consulting Engineering Service Surplus Mfg. Equipment Inventories Purchased

36" x 70" Overall Lebiond Combination Oil Field Turning. Threading. Bering & Trepanning Lathe (Can be used as a 25" CC Lathe) without boring attachment. In the control of the control of

#### **Pastern** Rebuilt Machine Tools THE SIGN OF QUALITY—THE MARK OF DEPENDABILITY

HORIZONTAL DRILLS

HORIZONTAL DRILLS

2 spindle No. 410 W.F. & John Barnes, m.d.
Model 410 W.F. & John Barnes, Horizontal Boring
& Drilling Machine, m.d.
No. 410 Barnes Single Spindle Deep Hole, m.d.
No. 2 Avey Style MA1, with horizontal operation
No. ½2BSOP Pratt & Whitney Gun Barrel Rifling
Machine, Model M1821 m.d., latest
No. 1½2x105" Model M 1825 Pratt & Whitney 2
spindle Gun Barrel Rifling, m.d.
No. 1 Model M509 Pratt & Whitney 2 spindle Deep
Hole Drill, belted, m.d.
Natco Horizontal Drill, 2 opposed B4F2 Head, 1943
3¼7x40" Bausch Double Horizontal Drilling Machine, m.d.

chine. m.d. & John Barnes Independent 2 spindle Deep Hole Drilling & Boring Machine, late odel 2F1 Natco Horizontal Boring & Drilling Ma-

chine, late Natco, holesteel model, m.d.

MULTIPLE SPINDLE DRILLS

2 spindle No. 6 Colburn Manufacturing Type H.D., separate m.d. to ea. spindle
3 spindle 28" Cincinnati-Bickford Upright Drill, m.d. No. 4 M.T.
6 spindle Model M1613 Pratt & Whitney In Line Vertical Drill of spindle W.F. & John Barnes Vertical Drilling Machine, m.d.

No. 924 Barnes Vertical Drilling, Boring, Facing &

No. 924 Barnes Vertical Drilling, Boring, Facing & Reaming Machine
UPRIGHT DRILLS
Model H.3 Barnes Hydram, m.d.
Model H.4 Barnes Hydram, m.d.
20" Barnes, m.d., 1940
20" Barnes All Geared Self-Oiling Drill & Tapper,

m.d. 20" Cincinnati-Bickford Super-Service Prod. Drill,

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21" Cincinnati-Bickford single spindle, m.d.
No. 2.AL Natco Holestel Vertical, m.d.
No. 2.Objurn Mg. Type, m.d.
No. 201—1/4 Barnes Single Sp. Upright Drill & Tapper, m.d.
No. 25 Foote-Burt, m.d., H.D.
No. 150 Baker H.D. Single Spindle, vee belt drive,

m.d.
No. 513 Baker, H.D., belted m.d.
GEAR GRINDING MACHINES
6x20" Fitchburg Hydraulic Spline & Gear, m.d.
GG19 Gear Grinding, m.d., latest
GG31 Gear Grinding, internal geared & spline

Grinder, m.d.

15" National Broach Red Ring Gear Lapper, m.d.
18" National Broach Red Ring Gear Lapper, m.d.,

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ARC MELTING FURNACES

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DETROIT FURNACES—10 lb. to 3000 lb. Cap.

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125 Ton HYDRAULIC PRESS, Down Moving Ram

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Quan. Size Description

2-3000 HP DC MOTORS-525V., 600 RPM Whse. M.G. Sets-2500 K.W. Whse., 2300/4160 V.

1-2750 HP DC MOTOR 450 V. 300 RPM Elliott 2200 K.W., Gen. Elec. 3 unit 450 V. DC Gen. with 3000 H.P. 720 RPM, 2300 V. AC Motor and Ftc

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100 CFM 125 gal 6 x 7 lng. er Werth.

131 CFM 100 pai 7 x 7 lng. E6-1

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286 CFM 500 pai 10-4½ x 10 lng.

286 CFM 500 pai 10-4½ x 10 lng.

287 CFM 75 gai 10 x 9 lng.—Werth.

286 CFM 150 pai 10-2 y 10g.—S1 lng. E8-3

455 CFM 150 pai 12 x 7½ x 7½ x 13 lng. E8-3

456 CFM 125 pai 12 x 13 Werth. HB

556 CFM 125 pai 12 x 13 Werth. HB

556 CFM 100 pai 15-9½ x 12 lng. X 16 Werth

270 CFM 125 pai 12 x 13 lng. E5

676 CFM 100 pai 15-9½ x 12 lng. X RB-Werth

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1545 CFM 100 pai 18-11 x 12 lng. X RB

1545 CFM 110 pai 21-13 x 14 lng. X RB

1545 CFM 110 pai 21-13 x 14 lng. X RB

250 PP 3-60-220 er 440

Portable—Cas-diesel 60'-800'

75 CFM Werth. pertable (New) \$2275

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#### IMPREGNATING TANKS

2—9'0" x 25'0" Devine .875" shell, verti-cal, 100 psi 2—8'7" x 3'70" Westinghouse 1.125" shell, horizontal, 150 psi

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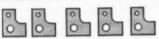
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Balancer: Tinius Olsen 2E016, prop. shaft, 1948
Berer: No. 70 Moline, vert. 6 spdl. cyt.
Boring Mill: 4" Universal, table, Timken, 1942
Bering Mill: 3" Sallers horiz. 1942
Bulldozer: 180 ton No. 27 Williams & White
Centering Machine: 6" x2" No. 56 Sundstrand
Chucker: 6/3" 665 New Britain, 1943
Compresser: 888 CFM Sullivan, 2 stage, 125 HP
Drill, Deep Hele: No. 420 W. F. & John Barnes,

Compresser: 368 CFM Sullivas, 2 stage, 125 NFP
Drill, Deep Hole: No. 420 W. F. & John Barnes,
1542
Drill: 217 Cin. Blek., SS, IL, late
Drill: 217 Baker box ed., Hy, Dy. 1943
Drill: Radial: 4' 117 Cariton, 1944
Grinder, Disc: 22" No. 22! Manchett opposed
Hammer: 100 lb. Murco upright
Lathe: 25 x 18" cc Axelson TA, 1942
Lathe: 126" y60" cc Niles
Mill, Bering: 100" Gisholt, vert.
Mill, Bering: 100" Gisholt, vert.
Mill, Bering: 100" Gisholt, vert.
Mill, Bring: 100" Gisholt, vert.
Mill, Planer: 42" x 42" x 10" ingersoil
Planer: 36" Reckford Hydr. open side. 1941
Press: 110 ton No. 6758 Bliss high speed
Press: 250 ton Minster KJ air el. 1945
Press: 250 ton Minster KJ air el. 1945
Press: 600 ton No. 768 Bliss high speed
Press: 90 ton No. 758 Bliss Cons. Nern.
Press: 150 ton HPM Hydraulic SS, 1946
Press: 350 ton Hamitton air clutch, 88, 1947
Roll: No. 18 Kamo & Roach straightener, 2½" bar
Saw: 10" x 10" Racine shear cut
Shaper: 12 Pratt & Whitney wert.
Shaper: 32 Threat New Dety, comb.
Slotter: 36 Reckford Hydr., 1943
Uncoiler: Cleveland 72" wide
Upsetter: 4" National, nir clutch, 1944

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New 1952
21/2" Stroke 22 3/4 x 181/4 Bed Area 91/2" Die Height 21/2" Bolster 10" Windows 8" Stock Width Speeds 75 to 475 Strokes Per Minute Equipped with Air Clutch, Tie Rods, Roll Feed, Scrap Cutter, Rowe Coil Cradles. U. S. Vari-Drive to 5 H.P. 220/440/3/60 Cycle Motors

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1	pc 30"	WF@	116#	15'7"
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1	pc 33"	WF@	240#	34'8"
1	pc 36"	WF@	194#	20'3"
1	pc. —	Do	- **	21'4"
1	pc 36"	WF@	245#	34'0"
1	pc	Do		35'6"
1	pc	Do		51'0"
1	pc	Do		85'21/2"
1	pc 36"	WF@	260世	87'7"
1	pc. —	Do		20'8"
1	pc. —	Do		43'8"
1	pc	Do		42'9"
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35 ton 134" x 10" x 19' Mild Plate

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100 ton General Motors (EMD) 600 HP, Model SW-1 built 1951. built 1951. In excellent condition, has had light use. Also for sale: two 45' flat cars, 190,000# capacity; one Buda engine, Medel 6-DCS-1879 (super charged), 283 HP.

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### Dies Coated with Tungsten Carbide

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WILL LEASE WITH OPTION TO PURCHASE, OR WILL FINANCE OVER LONG TERM

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ONE HOLCROFT COMPLETE CONTINUOUS 1000 LB. PER HR. IN-LINE GAS FIRED, RADI-ANT TUBE CLEAN HARDENING FURNACE WITH 38" WIDE ELECTRO ALLOYS CAST LINK BELT, GAS FIRED ENDOTHERMIC GENERATOR, CONVEYORIZED QUENCH, AND RECIRCULATING DRAW FURNACE. Elevator loader, Syntron belt feeder, Walter Kidde CO\* fire protection system, 10,000 gallon oil storage tank. NEW spare belt and numerous other parts.

We also have other heat treating furnace & generators.

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SPECIAL COLD DRAWN SHAPES STEEL — ALUMINUM — BRASS

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-15 Ton P&H O.E.T. Crane, 100' lift, 68' span. 230 volt DC open goaring, fishbelly girders, cab operated.

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Pair of Blooming Mill Housings, Cast Iron, with shoeplates, serews, open top, pimien stand and extra rolls—size 35".

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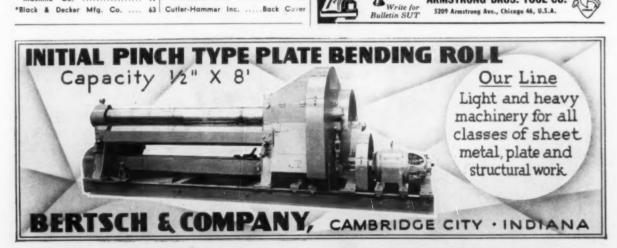
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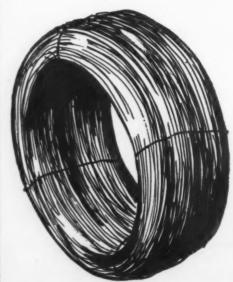
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